



JSC140/M2053

BHARAT HEAVY ELECTRICALS LTD.
(A GOVT. OF INDIA UNDERTAKING)
P.O BHEL Jhansi - 284120, INDIA
Tel.:0510-277001/2412260
Website : jhs.bhel.com

PURCHASE ENQUIRY

ENQ NO/DT: E06240006 30/05/24
REV NO/DT: 0 30/05/24

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PLEASE SEND YOUR BEST QUOTATION AS PER TERMS & CONDITIONS AND REMARK MENTIONED UNDERNEATH.

Enq Due on: 14-06-24 FRIDAY

Close at: 13:15 Open at: 14:00

Matcat: 061001 CONTINUOUSLY TRANSP

Validity: 120 days from Technical bid opening date

IEM: AS PER TENDER DOCUMENT

TOP: See Special Remarks

RA: RA not applicable

Est. Value: Item wise

Bid Type: TWO BID

Tot Item: 4

Delivery: FOR Jhansi

E-Proc: No

REQUIRED: TEST CERT/ GUARANTEE CERT

ITEM NO : 1
MATL CODE : TR173089A205
DESTINATION: JS

PSL QTY/UM: 1600.00 MT
PO QTY /UM: 1600000.00 KG

DESCRIPTION	DELIVERY	QUANTITY (PSL UM)
Upto 43// Strands and Cross Section	SEP-24	320.00
Area of individual strand 30 sq.mm	OCT-24	320.00
max. Proof Stress, Epoxy	DEC-24	320.00
coated/Glued CTC (with Kraft Paper	JAN-25	320.00
covered) as per Annex-A Rev-00.	MAR-25	320.00

ITEM NO : 2
MATL CODE : TR173089A206
DESTINATION: JS

PSL QTY/UM: 200.00 MT
PO QTY /UM: 200000.00 KG

DESCRIPTION	DELIVERY	QUANTITY (PSL UM)
Above 43// and Upto 65// Strands ,	SEP-24	40.00
Cross Section Area of individual st	OCT-24	40.00
rand 30 sq.mm max. Proof Stress,	DEC-24	40.00
Epoxy coated/Glued CTC (with Kraft	JAN-25	40.00
Paper covered)	MAR-25	40.00
as per Annex-A Rev-00.		

ITEM NO : 3
MATL CODE : TR173089A207
DESTINATION: JS

PSL QTY/UM: 400.00 MT
PO QTY /UM: 400000.00 KG

DESCRIPTION	DELIVERY	QUANTITY (PSL UM)
From 14// to 27// Strands, cross	SEP-24	100.00
section area of individual strand	OCT-24	100.00
20 sq.mm max. Proof stress nomex	DEC-24	100.00
covered CTC. Typical sizes	JAN-25	100.00
generally as per		
Annex-TRE/FRT/CPR Rev-02.		
Nominal value of 0.1% Proof stress		
shall be 135 Mpa with +10% and -10		
% tolerance.		

ITEM NO : 4
MATL CODE : TR173089A209
DESTINATION: JS

PSL QTY/UM: 50.00 MT
PO QTY /UM: 50000.00 KG

DESCRIPTION	DELIVERY	QUANTITY (PSL UM)
Up to 13// Strands, cross section	SEP-24	12.50



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area of individual strand 20
sq.mm max. Proof stress nomex
covered CTC. Typical sizes
generally as per
Annex-TRE/FRT/CPR Rev-02.
Nominal value of 0.1% Proof stress
shall be 135 Mpa with +10% and -10%
tolerance.

OCT-24 12.50
DEC-24 12.50
JAN-25 12.50

SPECIAL REMARKS:

1. ENQUIRY IS FLOATED FOR PROCUREMENT OF CTC AS PER TENDER DOCUMENT ANNEXURE-I TO ANNEXURE-X.
2. PLEASE READ ALL THE DOCUMENT CAREFULLY BEFORE SUBMITTING THE OFFER.
3. BIDS SHALL BE SUBMITTED IN A SEALED COVER WITH ENQUIRY NO., DUE DATE AND BIDDER(S) NAME INDICATED ON THE COVER. THE COVER SHOULD CONTAIN BOTH PART-I AND PART-II BIDS.
PART-II OF BID CONSIST OF PRICE BID AS PER PRICE FORMAT ANNEXURE-VI TO VII AND REQUIRED WITH DULY FILLED, SIGNED & STAMPED BY THE AUTHORIZED SIGNATORY OF THE VENDOR. EACH PRICE BIDS ENVELOPES SHALL BE DULY SUPER SCRIBED AS PRICE BID, ENQUIRY NUMBER, ENQUIRY ITEM NUMBER AND DUE DATE.
BIDDER HAS TO SUBMIT SEPARATE SEALED ENVELOPE OF PRICE BID AS PER PRICE BID FORMAT ANNEXURE-VI TO VII ONLY FOR THOSE ITEMS FOR WHICH THEY HAVE QUOTED.
IF ANY BIDDER WILLING TO QUOTE ANY ONE ITEM OF PURCHASE ENQUIRY, THEN BIDDER HAS TO SUBMIT SEPARATE SEALED ENVELOPE OF PRICE BID FOR THAT PARTICULAR ITEM AS PER PRICE BID FORMAT ANNEXURE- VI TO VII. THE ENVELOPES INDICATING PART-I OR PART-II, AS THE CASE MAY BE, TO BE PUT IN A BIGGER ENVELOPE, WHICH SHOULD BE ADDRESSED TO BELOW ADDRESS
IN-CHARGE,
TENDER ROOM, ADMINISTRATION BUILDING,
BHARAT HEAVY ELECTRICALS LTD., JHANSI (UP) INDIA
PIN CODE- 284120.
ENQUIRY NO., DUE DATE AND BIDDERS NAME MUST BE MENTIONED ON THE BIGGER ENVELOPE. OFFER MUST REACH TENDER ROOM OF BHEL JHANSI LATEST BY 13.15 HRS OF THE ENQUIRY DUE DATE.
IN CASE, THE BIDS ARE NOT SUBMITTED IN THE MANNER STATED ABOVE, THE OFFER OF THE BIDDER(S) ARE LIABLE TO BE REJECTED.
IT IS PREFERRED THAT OFFERS TO BE SENT IN SEALED ENVELOPE. HOWEVER, IF THE BIDDER CHOSSES TO SEND THE OFFER THROUGH E-MAIL, OFFERS RECEIVED THROUGH E-MAIL SHALL BE CONSIDERED ONLY WHEN SUCH OFFERS ARE COMPLETE IN ALL RESPECTS. IN CASES OF OFFERS THROUGH E-MAIL, THE OFFERS SHALL BE SENT TO EMAIL ID:- TENDERBOX.JHS@BHEL.IN ., WHEREIN THE SUBJECT OF THE EMAIL SHOULD MENTION THE ENQUIRY NUMBER. E MAIL OFFERS SENT TO ANY OTHER E MAIL ID SHALL NOT BE ENTERTAINED. BHEL SHALL NOT TAKE ANY RESPONSIBILITY IF THE OFFERS ARE INCOMPLETE OR IF THE ENQUIRY NUMBER IS NOT MENTIONED IN THE SUBJECT OF THE E-MAIL.
THERE WILL BE A SIZE LIMIT FOR THE VIA MAIL OFFERS, THEN SUPPLIERS SHOULD SEND THE OFFER IN PARTS AND EACH PART SHOULD CLEARLY STATE THE ATTACHMENT CONTENT INDICATING THE ENQUIRY NO. AND DUE DATE.
4. CLAUSE NO. 8C (RISK PURCHASE) OF GENERAL TERMS AND CONDITIONS OF ENQUIRY (JHS-2055A REV.03) WILL NOT BE APPLICABLE TO THIS ENQUIRY.



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THE QUOTATION MUST BE SEALED AND BE SENT IN DOUBLE ENVELOPE.

THE INNER ENVELOPE SHOULD BEAR ENQUIRY NUMBER & DUE DATE AT THE TOP.

In case the bidder has not submitted PAN No, TIN No. and E-mail ID, the bidder has to submit the same along with the copy of PAN No and TIN No. Else his offer will be liable to be rejected.

If you are not in a position to quote due to any reason, you must send regret letter titled enquiry no. etc, failing which you may not be considered for sending future enquiries.

ENCLOSERS:



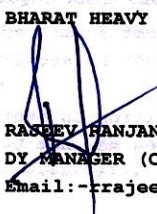
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FOR AND ON BEHALF OF
BHARAT HEAVY ELECTRICALS LTD


RAJEEV RANJAN
DY MANAGER (CMM)
Email:-rrajeev.s@bhel.in

***** END OF PURCHASE ENQUIRY *****

NOTE :

- * THE BIDDER IS INFORMED THAT THE GENERAL TERMS & CONDITIONS OF ENQUIRY (JHS 2055A Rev 03) WHICH ARE UPLOADED AT <https://jhs.bhel.com/apps/sip/index.php> AT (TERMS & CONDITION -> FOR ENQUIRY) LINK, ARE TO BE READ BY THE BIDDER BEFORE SUBMITTING QUOTE IN THE ENQUIRY. BHEL SHALL CONSTRUCE THE PARTICIPATION BY THE BIDDER IN ENQUIRY AS ACCEPTANCE TO THE GENERAL TERMS AND CONDITIONS OF ENQUIRY.
- * SUPPLIERS ARE REQUESTED TO INFORM US WITH VALID CERTIFICATE, IF THEY ARE REGISTERED UNDER MSMED ACT'2006. (APPLICABLE FOR INDIAN SUPPLIERS ONLY).
- * FOR SUPPLIERS SUPPLYING FROM OUTSIDE THE LOCAL AREA OF BHEL JHANSI, ENTRY TAX WILL BE APPLICABLE. SUPPLIERS SHOULD NECESSARILY INDICATE RATE OF ENTRY TAX SEPARATELY WHEREVER APPLICABLE. THEY SHOULD ALSO MENTION THE ENTRY TAX CHARGED SEPARATELY IN THE INVOICE.
- * FOR SUPPLIERS SUPPLYING FROM OUTSIDE UP, IN CASE THE OFFER IS SILENT ON ENTRY TAX, IT SHALL BE LOADED SUITABLY WITH THE APPLICABLE RATES
- * IN CASE IF THERE IS ANY DIFFERENCE BETWEEN THE 'SPECIAL REMARKS/ANNEXURES' OF THE ENQUIRY AND THE PREPRINTED TERMS & CONDITIONS (REF JSC140/M2053), THE REQUIREMENT GIVEN IN REMARKS WILL PREVAIL.
- * Reference Sl. No. 2(B) of General Terms and Conditions regarding option for offer submission through Email addressed to tenderbox.jhs@bhel.in , please note that the maximum mail size including attachments should not exceed 15 MB , otherwise the offer shall not be delivered due to size limitation and bidder sending mail attachments more than 15 MB will have no claim whatsoever on the subject tender . Also due to any technical snag , if offer has not reached tenderbox.jhs@bhel.in , it will be bidder's sole responsibility to ensure offer submission through alternate routes before the due date and time .BHEL will not entertain any such claim for non-receipt of offer on time .

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

1. **General:-** Global tenders are invited in Two-Part Bid system for purchase of CTC Copper conductors as per various drawings/ Specifications and terms & conditions mentioned in the Annexures -“I to X” on finished & returnable drum basis. The supplies against this contract enquiry shall be subject to our General Terms and conditions of enquiry and PO. In addition, the terms and conditions given under this annexure shall specifically apply to this enquiry. If any difference between the General Terms and conditions of enquiry, purchase order, the conditions included in this annexure shall prevail. The offer of the bidders who are in the banned list as also the offer of the bidders who engage the services of the banned firms shall be rejected. List of banned firms is available on BHEL website: www.bhel.com. Likewise, offers of those bidder(s) will not be considered who have been suspended (under hold / delisting) by BHEL, Jhansi during the given period.

Your best quotation/offer for the requirement mentioned in “PURCHASE ENQUIRY”, in line with our terms and conditions, should be submitted in paper mode only as mentioned in clause 2. It shall be the responsibility of the bidder to ensure that the Tender is submitted on or before the due date. Detailed Tender documents can be downloaded from the following websites: - a) www.bhel.com b) <https://eprocure.gov.in/>

2. **Procedure for Bid submission:** - Offer shall be submitted by the bidders in two parts; -

Part – I Technical cum Commercial bid

- Part – I Technical cum Commercial bid
- Part - II Price bid

Both Part –I & Part –II of the offer shall be kept in two separate sealed envelopes duly super scribed as Part - I ‘**Technical cum Commercial bid**’ and Part - II ‘**Price bid**’. The enquiry number and due date shall also be super scribed on both the envelopes.

The envelopes indicating Part –I or Part-II, as the case may be, to be put in a bigger envelope, which should be addressed to **In-charge, Tender Room, Bharat Heavy Electricals Ltd., Administration Building, Jhansi 284120**. Enquiry No., due date and bidder's name must be mentioned on the bigger envelope. Offer must reach tender room of BHEL Jhansi latest by 13.15 hrs of the enquiry due date.

Part-I of the bid shall contain complete details of the product offered, filled in ‘**INTEGRITY PACT**’ in original, duly signed by the authorized signatory of the vendor who signs the bid and acceptance to the following:-

- (i) Instruction to bidders containing Commercial Terms & Conditions applicable for tender enquiry of – Continuously transpose copper conductor (CTC) under RC - **Annexure – I**.
- (ii) Pre-Qualifying requirement- **Annexure-III**
- (iii) Techno-commercial format-**Annexure-IV** for indigenous vendor and **Annexure-V** for Foreign bidder
- (iv) Price format - **Annexure VI** for indigenous vendor and **Annexure-VII** for foreign bidders.
- (v) Un-price bid **Annexure-VIII**
- (vi) Integrity Pact- **Annexure-IX**
- (vii) General ‘Terms and conditions of enquiry (JHS 2055A rev 03) and Various Specifications.

Part – II Price bid

There are 4 items in this enquiry as mentioned below. Price to be quoted in Price bid sheet as provide with tender document. For indigenous and foreign bidders 4 separate- separate price bids are attached for individual items. For item 1 & 2 bidder has to quote the fabrication rate in Currency /Kg and extra charges in the unit as specified in the respective price bid format. For item 3 & 4, bidder has to quote the fabrication rate inclusive of all the possible extras.

Bidders are requested to quote only those items whose range of manufacturing is covered in items mentioned at SI no-06

Note: -

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

- . Documents and Credential as per Technical & Financial PQR, Techno Commercial Bids and Price Bids should be submitted along with the bid.
 - . For more details regarding tender submission please refer Clause 2-B General terms of Enquiry (JHS 2055A rev 03)
 - . Bidders to ensure that Third party/customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/certificate issuing authority such as name & designation of Issuing Authority and its organisation contact number and email Id etc. In case the same found not available, Purchaser has right to reject such document from evaluation.
3. **Bid Opening:** - The 'Techno-commercial' part of the bid i.e. Bid Part –I of the offers shall be opened. Clarifications, wherever required on this part, shall be obtained from the bidders for their evaluation. The Price bid Part-II of such vendors alone shall be opened whose techno-commercial bids are found acceptable. The date of 'Price bid -Part II' opening shall be intimated later on. Before price bid opening all formalities for registration has to be completed by the bidders as per new supplier link at www.bhel.com.
4. **Pre Qualification Criteria :** For Pre-qualification criteria, refer Annexure-III
Offers of those bidders who meet the Pre-qualification criteria mentioned in Annexure-III will be accepted. Any deviation from these shall render offer submitted by bidder as rejected.
Bidders have to submit duly filled, signed & sealed copy of Annexure-III with all relevant documents as required.
5. **Bid evaluation:** The bid shall be evaluated on total delivered cost to BHEL (landed cost net of input tax credit) taking into account all duties / taxes / Cess as per prevailing structure on date of bid opening date (bid part-I) and based on the LME CSP & SBI TT Selling rate (US\$-INR) prevailing on the date of bid opening date (bid part-I).
If LME CSP rate and SBI TT selling rate is not available on Part-I bid opening date due to holiday then LME CSP rate and SBI TT selling rate prior to Part-I bid opening date shall be considered.
Bidders may note that quoted rates shall be loaded for any deviation from the terms & conditions given in this enquiry, to arrive at landed cost and same shall be communicated to techno-commercially suitable bidders before price bid opening.

Foreign bidder rate as calculated shall be converted in Rs/Kg for evaluation. Conversion of Currency - INR shall be taken on Part-I bid opening date. Conversion of Currency –INR shall be taken from FBIL website i.e <https://www.fbil.org.in/>

Evaluation of tender shall be done on item wise L1 basis.

6. **Technical Parameters and Tendered Quantity:-**

CTC to be supplied under this enquiry shall strictly conform to Annexure-II rev00 purchase/technical specifications for item no-01 & 02 and for item 3 & 4 Annexure "REF: TRE/FRT/CPR Rev02" to be followed.

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

Tender Quantity:

Item wise quantity shall be as below:

All quantity in MT (Metric Ton)

Item no	Item Description	Qty		
		BHEL Bhopal	BHEL Jhansi	Total
01	Upto 43// Strands and Cross Section Area of individual strand 30 sq.mm max. Proof Stress, Epoxy coated/Glued CTC (with Kraft Paper covered) as per Annex-II Rev-00.	1300	300	1600
02	Above 43// and Upto 65// Strands , Cross Section Area of individual strand 30 sq.mm max. Proof Stress, Epoxy coated/Glued CTC (with Kraft Paper covered) as per Annex-II Rev-00.	100	100	200
03	From 14// to 27// Strands, cross section area of individual strand 20 sq.mm max. Proof stress nomex covered CTC. Typical sizes generally as per Annex-TRE/FRT/CPR Rev-02. Nominal value of 0.1% Proof stress shall be 135 Mpa with +10% and -10 % tolerance.	0	400	400
04	Up to 13// Strands, cross section area of individual strand 20 sq.mm max. Proof stress nomex covered CTC. Typical sizes generally as per Annex-TRE/FRT/CPR Rev-02. Nominal value of 0.1% Proof stress shall be 135 Mpa with +10% and -10% tolerance.	0	50	50

Tentative Quantity of Normal density Thermally upgraded paper (TUP) covered CTC in 1 & 2

Enquiry Item no	Total Tender Qty	Out of total tender Qty, TUP Covered CTC Qty
1	1600	700
2	200	75

Tentative Quantity and differential rate for Normal density thermally upgraded insulating paper (TUP) used for wrapping of CTC in item 1 & 2 only

Enquiry Item no	Insulating Paper Type	Qty in MT for BHEL Bhopal and Jhansi	Differential Rates in Rs/Kg for indigenous vendor *	Differential Rate in US- \$/Kg For Foreign vendor #
1	Normal density Thermally upgraded paper	35	150.00	1.79
2	Normal density Thermally upgraded paper	2	150.00	1.79

* Differential rate for Special Paper in Rs/kg mentioned above, shall be remain firm throughout the validity of the contract

Differential rate for Special Paper mentioned above in US- \$ /Kg, shall be remain firm throughout the validity of contract. If any foreign bidder quotes the fabrication rate in the given price bid in any other foreign currency, then conversion from US-\$ to that currency shall be calculated as on the Part-I bid opening date and that rate shall be firm throughout the validity of the contract.

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

Important note:

- Quantity mentioned in purchase enquiry are insulated weights which include Bare and insulation of Copper conductor.
- Conversion of Currency shall be taken form FBIL website i.e <https://www.fbil.org.in/>
- Quantity of each enquiry item may vary $\pm 25\%$.

7. **Pricing Terms** :- Material will be supplied on finished basis as per pricing terms given below:-

7.1 For Indigenous bidder:

- A) **LME CSP for Copper & Exchange rate for US \$:** - LME CSP & Exchange rate will be as per below table lot wise for copper booking (excluding date of LOI) Exchange rate shall be SBI TT Selling rate on LME CSP booking day. In case of SBI TT selling rate is not available due to holiday on the scheduled LME working day, then SBI TT selling rate of next working day shall be considered.

LOT	LME CSP DAY
1	3 rd LME working day from LOI date(excluding the LOI date)
2	46 th day from LOI date(excluding the LOI date)
3	92 nd day from LOI date(excluding the LOI date)
4	138 th day from LOI date(excluding the LOI date)
5	184 th day from LOI date(excluding the LOI date)

Sample elaboration for LME CSP and Exchange rate fixation:

If LOI is issued on 01.06.2024 then for first lot LME CSP booking day will be 05.06.2024 as per LME trading calendar. if 5th Jun LME holiday then next working day shall be considered.

For 2nd lot LME CSP booking day will be 17.07.2024 if holiday then next LME working day

For 3rd lot LME CSP booking day will be 01.09.2024 if holiday then next LME working day

For 4th lot LME CSP booking day will be 17.10.2024 if holiday then next LME working day

For 5th lot LME CSP booking day will be 02.12.2024 if holiday then next LME working day

B) **Premium (USD / MT):-** 190. This will be firm through out the validity of contract.

C) **Multiplication factor (MF):-** 1.055*

*This is as per notional customs duty, presently it is 1.055

D) **Copper Rate (Rs / Kg):-** (LME CSP + Premium) X Exchange rate X MF/1000.

E) **Fabrication Rate (Rs / KG):-** To be quoted by bidders in Price Bid format.

F) **Extra Charges*** - As applicable for individual PO item mentioned above in clause no- 06 of Annexure-I and shall be firm throughout the contract.

G) **PO Rate:** - Sum of D + E + F

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

7.2 For Foreign bidder:

- A) LME CSP for Copper & Exchange rate for US \$:-** LME CSP & Exchange rate converting in to foreign currency will be as per below table lot wise for copper booking (excluding date of LOI). In case of exchange rate is not available due to holiday on the scheduled LME working day, then Exchange rate of next working day shall be considered.

LOT	LME CSP DAY
1	3 rd LME working day from LOI date(excluding the LOI date)
2	46 th day from LOI date(excluding the LOI date)
3	92 nd day from LOI date(excluding the LOI date)
4	138 th day from LOI date(excluding the LOI date)
5	184 th day from LOI date(excluding the LOI date)

Sample elaboration for LME CSP and Exchange rate fixation:

If LOI is issued on 01.06.2024 then for first lot LME CSP booking day will be 05.06.2024 as per LME trading calendar. if 5th Jun LME holiday then next working day shall be considered.

For 2nd lot LME CSP booking day will be 17.07.2024 if holiday then next LME working day

For 3rd lot LME CSP booking day will be 01.09.2024 if holiday then next LME working day

For 4th lot LME CSP booking day will be 17.10.2024 if holiday then next LME working day

For 5th lot LME CSP booking day will be 02.12.2024 if holiday then next LME working day

- B) Premium (USD / MT):-** 190. This will be firm throughout the validity of contract.
- C) Copper Rate (Foreign Currency / Kg):-** (LME CSP + Premium) X Exchange rate X /1000.
- D) Fabrication Rate (Foreign Currency / KG):-** To be quoted by bidders in price bid format.
- E) Extra Charges*** - As applicable for individual PO item mentioned above in clause no- 06 of Annexure-I and shall be firm throughout the contract.
- F) PO Rate:** - Sum of C + D + E.

Extra charges for covering of Normal density Thermally upgraded paper shall be paid only for item no 01 & 02 and no extra charges shall be paid for item no- 3 and 4.

For evaluation purpose, extra charges will be considered with respective weightage as mentioned at SI no- 06 in Annexure-I. **Sample calculation sheet is attached separately.**

However, the rate of individual purchase order items, extra charges as applicable shall be calculated based on technical Annexures provided at the time of issue of LOI / purchase order.

Premium & fabrication rate shall be firm throughout the validity of the contract. The fabrication rate shall be inclusive of all tooling cost, enameling /insulation cost, proof stressing, epoxy coating/glued, packing, freight, insurance and forwarding charges etc. and no extra charges shall be payable on whatsoever account. The rate shall be quoted for both Bhopal and Jhansi unit for item no-01 & 02.

While quoting the rates, bidders must take into account the following factors in addition to whatever they deem fit:

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

- No extra charges shall be paid for packing, forwarding, radial insulation, fumigation, weight per drum and Cross section of conductor etc.
- Bidders shall quote their most competitive rates, which shall be valid regardless of the quantity that may be awarded to them.

The packing material i.e. drums on which the CTC Copper Conductors shall be supplied can be **re-usable** and will remain property of the supplier. Supplier shall time to time collect the same at their own cost so that work space at BHEL is not limited due to empty drums. Benefit of the saving on this account to be passed on, while quoting the rates. **The empty drum will be collected by the suppliers from BHEL works at their own cost.**

8. **PVC (Price variation Clause) Applicable:** Yes, as per pricing Terms mentioned at clause 7.
9. **Transit Insurance:** - By the bidder.
10. **Number of Suppliers:** - We may need 3 suppliers for execution and the tentative distribution of quantities among L1, L2 & L3 may would be in the ratio of **50:30:20**. Number of minimum suppliers required to execute this contract may change depending upon committed capacity and also acceptance to counter offer, if any, made by BHEL. Quantity distribution to bidders shall be limited to (n-1) limited to 3 bidders where n is number of techno – commercially qualified bidders and shall be as shown below.

n	L1	L2	L3	TOTAL
1	100	-	-	100
2	60	40	-	100
3	50	30	20	100

11. **Vendors Approved by BHEL's Customers:** - Bidders may note that CTC Copper Conductors for most of the customers is to be sourced from customer's approved vendors only. In those cases, BHEL would place purchase orders pertaining to requirement of such contracts on the approved vendors of respective customer only. The percentage ordering, as per the contract, may therefore vary depending upon the nature of orders received by BHEL on account of sourcing from customer approved vendors.
12. **Quantity Tolerance:** - Against individual P.O. items quantity tolerance shall be $\pm 2\%$. However, requirements such as the specified length/No. of pieces and other dimensions shall be strictly adhered to.
13. **Inspection of material:** -
Test Certificates shall be as per annexures provided at the time of issuing of purchase order, purchase specifications, QA plan etc. and must accompany with each lot against supply. Final inspection for acceptance of quality and quantity shall be done at BHEL's works after receipt of material and results shall be binding on the suppliers.
14. **Replacement of rejected Goods:** - Final inspection for acceptance of quality shall be at BHEL's works after receipt of material and results shall be binding on the suppliers. In case of rejection due to non compliance to agreed specification and for the reasons attributable to the vendor, the materials shall be replaced by vendor free of charge on "FOR BHEL works basis" including interlay cost elements such as total transportation, insurance and other taxes / levies etc as applicable. The rejected goods shall be subsequently returned to the vendor at his cost.
15. **Taxes & Duties:** - All taxes & duties shall be paid extra and as applicable at the time of dispatch within India only will be paid / reimbursed by BHEL against valid tax invoice and same will be loaded for price comparison on delivered cost to BHEL (i.e. landed cost net of input tax credit). Since, input credit of GST will be available to BHEL-Jhansi only after correct filing of return and payment of applicable GST by supplier, reimbursement of GST shall be made by BHEL-Jhansi on matching of vendor inputs at GST portal and after ensuring availability of input credit to BHEL-Jhansi. Payment of tax shall be done only after availing matching ITC, in all cases where bills are submitted directly to BHEL-Jhansi or through bank or under LC or through any other mode.

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

Other statutory declaration forms are also to be submitted in time, as mentioned in the relevant Laws. BHEL reserves the right to withhold the payment due to the vendor equivalent to BHEL's tax and related liability thereon. In case of any changes in statutory laws w.r.t. taxes and duties, the same shall be applicable at the given point of time.

16. Payments Terms:-

For Indigenous bidders

100% payment within 90 days of receipt of material (45 days for MSE / NSIC registered suppliers as per relevant act in force), subject to acceptance of material at BHEL, on direct presentation of the documents.

Any deviation from the above payment terms, if accepted (by BHEL), shall be loaded @ SBI base rate (as on date of Part I bid opening) + 6%, for the purpose of bid evaluation.

For Foreign bidders

100% against irrevocable, unconfirmed LC, payable within 120 days of the bill of landing (BL) date. In case BHEL considers any deviation in payment terms i.e. early payment based on vendor's request, then bids shall be evaluated with loading of State bank of India Base rate (as on date of Part I bid opening) plus 6%, for the credit period short of 120 days. The LC shall be established 2 month prior to shipment date, valid for period of 120 days, unless agreed otherwise.

Payment terms of CAD payable on 120th day of BL / HAWB date shall be preferred.

For more details refer clause 15 of General terms and conditions (JHS2055A rev03) 03 of enquiry.

17. Terms of delivery:-

For Indigenous Vendor On FOR destination basis.

For foreign vendors:

- (i) Goods shall be dispatched by sea on CIF, Mandideep, Madhya Pradesh on FCL Cargo basis, unless stated otherwise in the enquiry or purchase order.
- (ii) In the event of bidder offering CFR or CIF delivery terms for delivery in FCL(Full Container Load), the Bidder shall provide 14 days' time free of detention from the date of delivery at delivery port. Wherever the detention free period offered is less than 14 days, the bids shall be loaded for the period short of 14 days period.
- (iii) Port congestion charges or any additional charges claimed by shipping line till delivery at destination port shall be to the Seller's account.

18. Guarantee Clause:- As per Annexure-II.

19. Short Closure:- BHEL reserves the right to short close tender at any point of time during validity of the tender.

20. Validity of Offer:- Offer should be valid for a period of 120 days from the date of techno-commercial bid opening date (part-1) for finalization of the contract.

21. Left as blank.

22. Levy of Penalty for delayed performance:- As per Clause no: 8 of General Terms and conditions (JHS 2055A Rev 03) of enquiry.

Recovery of LD by BHEL from vendors / Contractors or forfeiture of EMD in case of breach of contract etc. is not liable to GST.

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

"Before deducting LD, the contractor shall be intimated about deduction of LD and reasons thereof through mail"

23. Tenders shall be submitted strictly in accordance with the requirements of the above tender documents
24. Standard pre-printed terms & conditions of the tenderers may not be considered valid and offer may liable for rejection.
25. All the above tender documents shall automatically become a part of the Order/Contract after its finalization.
26. All corrigenda addenda, amendments, time extensions, clarifications etc. to the tender will be hosted on BHEL websites only (www.bhel.com & [https:// eprocure.gov.in/](https://eprocure.gov.in/) under subject tender reference. Bidders are requested to visit our websites from time to time to keep themselves updated. Bidders may go through the Sellers' manual & Help documents provided on E-Procurement Po.
27. Bidders to submit their offers strictly in line with the form available at e-procurement portal.
28. **Integrity Pact (IP) – Independent external monitor (IEM) :-** As per Annexure-IX.
29. **Fraud Prevention Policy:** The Bidder along with its associate/collaborators/sub-contractors/sub-vendors/consultants/service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.
30. **Breach of Contract, Remedies and Termination:**
 - 30.1 The following shall amount to breach of contract:
 - i) Non-supply of material/ non-completion of work by the vendor within scheduled delivery/ completion period as per contract or as extended from time to time
 - ii) The vendor fails to perform as per the activity schedule and there are sufficient reasons even before expiry of the delivery/ completion period to justify that supplies shall be inordinately delayed beyond contractual delivery/ completion period.
 - iii) The vendor delivers equipment/ material not of the contracted quality.
 - iv) The vendor fails to replace the defective equipment/ material/ component as per guarantee clause.
 - v) Withdrawal from or abandonment of the work by the vendor before completion as per contract.
 - vi) Assignment, transfer, subletting of Contract by the Supplier/Vendor without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
 - vii) Non-compliance to any contractual condition or any other default attributable to Contractor/ Vendor.
 - viii) Any other reason(s) attributable to Vendor towards failure of performance of contract. In case of breach of contract, BHEL shall have the right to terminate the Purchase Order/ Contract either in whole or in part thereof without any compensation to the vendor/Supplier.

30.2 Remedies in case of Breach of Contract.

In case of Breach of Contract, BHEL shall recover 10% amount of the contract value from the vendor in following manners:

- a) Forfeiture/ encashment of Security instruments (Performance security, EMD etc.) available against the said contract.

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

- b) In case the value of security instruments available is less than 10% of the contract value, the balance amount shall be recovered from other financial remedies (i.e. available bills of the vendor, retention amount etc. with BHEL TBG or any other units of BHEL.
- c) Demand notice for deposit of balance recovery amount shall sent to the vendor, if security instruments or financial remedies are insufficient to affect the complete recovery.
- d) If vendor / supplier fails to deposit the balance amount as per (c) above within the period as prescribed in demand notice, following action shall be taken for balance recovery:
 - i) Dues payable to Vendor /supplier against other contracts in the same region shall be considered for recovery.
 - ii) If recovery cannot be made out of dues payable to the vendor / supplier as above, balance amount to be recovered, shall be informed to other Regions/Units of BHEL for making recovery from the Unpaid Bills/Running Bills/SD/BGs/Final Bills of vendor /supplier.
 - iii) In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against vendor /supplier.

31 **Clause number 25 of GTC (JHS-2055A Rev-03) shall be rephrased as under:**

Settlement of Dispute

If any dispute or difference of any kind whatsoever shall arise between BHEL and the Contractor, arising out of the contract for the performance of the work whether during the progress of contract termination, abandonment or breach of the contract, it shall in the first place referred to for resolution by the Designated Engineer (to be nominated by BHEL for settlement of disputes arising out of the contract) who within 60 days after being requested shall give written notice of his decision to the contractor. Save as hereinafter provided, such decision in respect of every matter so referred shall forthwith be given effect to by the contractor who shall proceed with the work with all due diligence, whether he or BHEL desires to resolve the dispute as hereinafter provided or not.

If after the Designated Engineer has given written notice of this decision to the party and no intention to pursue the dispute has been communicated to him by the affected party within 30 days from the receipt of such notice, the said decision shall become final and binding on the parties. In the event the contractor being dissatisfied with any such decision or if amicable settlement cannot be reached then all such disputed issues shall be resolved through Conciliation as per Clause

31.1 Conciliation:

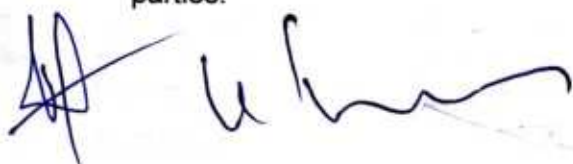
Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to this Agreement (including its interpretation) between the Parties, and so notified in writing by either Party to the other Party (the "Dispute") shall, in the first instance, be attempted to be resolved amicably in accordance with the conciliation procedure as per BHEL Conciliation Scheme 2018. The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided to GCC- "Procedure for conduct of conciliation proceedings" (as available in www.bhel.com)).

31.2 ARBITRATION:

Except as provided elsewhere in this Contract, in case Parties are unable to reach amicable settlement (whether by Conciliation to be conducted as provided in Clause 25.1 or otherwise) in respect of any dispute or difference; arising out of the formation, breach, termination, validity or execution of the Contract; or, the respective rights and liabilities of the Parties; or, in relation to interpretation of any provision of the Contract; or, in any manner touching upon the Contract (hereinafter referred to as the 'Dispute'), then, either Party may, commence arbitration in respect of such Dispute to be adjudicated by Sole Arbitrator to be appointed by mutual consent of the parties from among the List of empanelled Arbitrators maintained by BHEL, in the following manner:

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender Enquiry E06240006 .

- A) A party willing to commence arbitration proceeding shall invoke Arbitration Clause by giving notice to the other party in terms of section 21 of the Arbitration & Conciliation Act, 1996 (hereinafter referred to as the 'Notice'). The Notice shall be addressed to the Head of the UNIT/ Power Sector Region, BHEL, executing the Contract and shall contain the particulars of all claims to be referred to arbitration with sufficient detail and shall also indicate the monetary amount of such claim.
- B) BHEL, shall within 60 days from the receipt of such notice shall send a panel of at least three arbitrators from among its empanelled arbitrators or otherwise to the Contractor for choosing one among them for such appointment, within 15 days from the date of receipt of the Panel of Arbitrators from BHEL.
- C) Upon receipt of the consent from the Contractor, Head of the UNIT/Power Sector Region, BHEL shall appoint the sole arbitrator as short listed by the Contractor, within 15 days from the receipt of such nomination. Notice to the Parties of the constitution of the arbitral tribunal shall be issued by BHEL.
- D) In case, the contractor fails to inform its choice of name for appointment of sole arbitrator from the panel of at least three arbitrators sent by BHEL or no response is received from the contractor, within 15 days from the date of receipt of the Panel of Arbitrators from BHEL, Head of the UNIT/ Power Sector Region, BHEL shall appoint the sole arbitrator from among the three names sent to the contractor earlier.
- E) If the Arbitrator so appointed dies, resigns, becomes incapacitated or withdraws for any reason from the proceedings or his mandate is terminated by the Court, it shall be lawful for Head of the UNIT/Power Sector Region, BHEL to appoint another person in his place in the same manner as aforesaid. Such person shall proceed with the reference from the stage where his predecessor had left.
- F) The Claimant shall be responsible for making all necessary arrangements for the travel/ stay of the Arbitrator including venue of arbitration, hearings and other incidental expenses. It is also term of the contract that the claimant shall bear the arbitrator fee, administrative expenses and cost for the claims and the Respondent shall bear the arbitrator fee, administrative expenses and cost for the counter claims.
- G) If after commencement of the Arbitration proceedings, the parties agree to settle the dispute mutually or refer the dispute to mediation or Conciliation, the arbitrator shall put the proceedings in abeyance until such period as requested by the parties. Where the proceedings are put in abeyance or terminated on account of mutual settlement of dispute by the parties, the fees payable to the arbitrator shall be determined as under: i. 40% of the fees if the Pleadings are complete. ii. 60% of the fees if the Hearing has commenced. iii. 80% of the fees if the Hearing is concluded but the Award is yet to be passed. g. Each party shall pay its share of arbitrator's fees in stages as under or as per the directions of Arbitrator:
 - i. 40 % of the fees on Completion of Pleadings.
 - ii. 40% of the fees on Conclusion of the Final Hearing.
 - III. 20% at the time when arbitrator notifies the date of final award.
- H) The seat and venue of Arbitration shall be (to be opted by the respective Unit) like New Delhi for PNSR.
- I) The Arbitrator shall give reasoned and speaking award and it shall be final and binding on the parties.



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Subject to the aforesaid conditions, provisions of the Arbitration and Conciliation Act, 1996 and any statutory modifications or re-enactment thereof as amended from time to time, shall apply to the arbitration proceedings under this clause.

In case of Contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable:

In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs)/ Port Trusts inter se and also between CPSEs and Government Departments/Organizations (excluding disputes concerning Railways, Income Tax, Customs & Excise Departments), such dispute or difference shall be taken up by either party for resolution through AMRCD (Administrative Mechanism for Resolution of CPSEs Disputes) as mentioned in DPE OM No. 05/0003/2019-FTS-10937 dated 14-12-2022 as amended from time to time.

32 Clause 7 (Force Majeure) of GTC (JHS-2055A Rev-03) shall be rephrased as under:

"Force Majeure" shall mean circumstance which is: a) beyond a party's control, b) The party could not reasonably have provided against before entering into the contract, c) Having arisen, such party could not reasonably have avoided or overcome, and d) Is not substantially attributable to the other party. Such circumstances include but not limited to

- i) Exceptionally adverse climatic conditions at the site which are unforeseeable having regard to climate data available or published in the country for the geographical location of the site.
- ii) War, hostilities (whether war be declared or not), invasion, act of foreign enemies.
- iii) Rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war.
- iv) Riot, commotion or disorder by persons other than the contractor's personnel and other employees of the contractor and sub-contractors.
- v) Strike or lockout not solely involving the contractor's personnel and other employees of the contractor and sub-contractors.
- vi) Encountering munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the contractor's use of such munitions, explosives, radiation or radio- activity.
- vii) Natural catastrophes such as earthquake, tsunami, volcanic activity, hurricane or typhoon, flood, fire, cyclones etc.

32.1.1 The following events are explicitly excluded from Force Majeure and are solely the responsibilities of the non-performing party: a) any strike, work-to-rule action, go-slow or similar labour difficulty (b) late delivery of equipment or material (unless caused by Force Majeure event) and (c) economic hardship.

32.1.2 If either party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within 15 (fifteen) days after the occurrence of such event.

The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered or delayed. The Time for Completion shall be extended by a period of time equal to period of delay caused due to such Force Majeure event.

32.1.3 Delay or non-performance by either party hereto caused by the occurrence of any event of Force Majeure shall not

- i) Constitute a default or breach of the Contract.

Terms & Conditions for supply of CTC Copper Conductors on finished basis against Global tender, Enquiry E06240006 .

- ii) Give rise to any claim for damages or additional cost expense occasioned thereby, if and to the extent that such delay or non-performance is caused by the occurrence of an event of Force Majeure.

BHEL at its discretion may consider short closure of contract after 1 year of imposition of Force Majeure in line with extant guidelines. In any case, Contractor cannot consider deemed short-closure after 1 year of imposition of Force Majeure.

Notwithstanding GTC (JHS-2055A Rev-03), Force Majeure shall not apply to any obligation of the BHEL to make payments to the Contractor herein.

33 Changes in law and regulations:

33.1 Change in Law” shall mean any of the following events which occurs in India after seven (7) days prior to the Price Agreement Date:

- a) the enactment of any new law;
- b) the modification, repeal or re-enactment (other than a re-enactment which merely consolidates or codifies existing Applicable Laws) of any existing Applicable Laws;
- c) the commencement of any Applicable Laws which had not yet been effective except to the extent such law was enacted prior to the said date with a commencement after the said date and such law takes effect on that commencement date without material amendment;
- d) a change in the code/standard/statute or interpretation or application of any law or order by judicial or other authority (including a court, tribunal or any other Governmental Authorities) having the authority to interpret or apply that law or any interpretation of any law by such authority which is contrary to the existing generally accepted interpretation thereof; or
- e) a loss of any Applicable Permit (or an amendment to an Applicable Permit) to the extent that such Change in Law has a material adverse effect on the Contract Price by an amount exceeding the value as may be mutually agreed by the Parties, or on the Time for Delivery, provided that such event has not been caused due to the default or negligence of the Supplier.

33.2 The Supplier shall, on or following the occurrence of a Change in Law, give notice of such Change in Law to the Project Manager in accordance with the provisions of this Clause as soon as may be reasonably practicable after becoming aware of the same. The notice served pursuant to this Clause shall provide, inter alia, details of the Change in Law and the effect thereof on the Supplier. If the Project Manager accepts that the occurrence of such event is under the provisions of the Change in Law, then the Contract Price shall be correspondingly increased or decreased, and/or the Time for Delivery shall be reasonably adjusted to the extent that the Supplier has thereby been affected in the performance of any of its obligations under the Contract.

33.3 If the rate of Taxes applicable on the Plant and Equipment undergoes any revision until achievement of the Time for Delivery, the same shall be allowed as a Change in Law and shall be reimbursed by the Employer. If any such variation in Taxes takes place after the Time for Delivery, the same shall not be allowed by the Employer. For the avoidance of doubt, it is clarified that occurrence of any revision with respect to the Supplier Taxes shall not be allowed as a Change in Law and shall solely be to the account to the Supplier.

33.4 If due to enactment of such Change in Law, the Supplier is entitled for any additional amount, the same shall be paid against a claim supported by documentary evidence by the Supplier substantiating the Supplier's claim, including priced invoices and such other document(s) as may be required by the Employer in this respect, to establish to the Employer's satisfaction that the Supplier has been adversely affected by such Change in Law event.

33.5 If, due to enactment of such Change in Law, the Employer is entitled to recover any amount, the same shall be claimed from the Supplier as per the term of the Contract.

34 Clause 26 of GTC (JHS-2055A Rev-03), shall be rephrased as under:

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The contract shall be governed by the Law for the time being in force in the Republic of India. Subject to clause (Related to Arbitration clause) of this contract, the Civil Court having original Civil Jurisdiction at Jhansi, shall alone have exclusive jurisdiction in regard to all matters in respect of the Contract.

- 35 The bidder will, when presenting his bid, declare whether other family firms or sister concern affiliates/subsidiary firm are participating in same tender, so as to eliminate the possibility of cartel formation. Format for declaration is attached as Annexure.
- 36 The bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other action to restrict competitiveness or to introduce cartelization in the bidding process. In case the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/guidelines.
- 37 Please refer model clause as per **Annexure-X** and bidders have to submit the model certificates as per **Annexure-X**.
- 38 Commercial Conditions quoted by the vendor in any place including as stated in bidder's 'General Terms and Conditions' if any, shall not be binding on the Purchaser and the conditions contained in this annexure, including General terms & Conditions rev 03 of enquiry shall only prevail.
- 39 All clarifications / tender related issues shall be directly to the tender issuing (procurement) department's official whose contact details are provided below:

Name	Rajeev Ranjan/ Naveen Kumar	K. Saravanan
Department	CMM	CMM
Address	BHEL Jhansi	BHEL Jhansi
Phone number	+91- 9487669022/ 8765956505	+91-972060513
Email	rrajeev.s@bhel.in / nkmahaseth@bhel.in	saravanank@bhel.in


K. Saravanan
DGM(CMM)


Rajeev Ranjan
Dy. Mgr(CMM)

114882/2024/HEP-CMM34007


Ref: TRE/FRT/CPR REV-02

**COPPER DATA FOR CONTINUOUSLY TRANSPOSED NOMEX COVERED COPPER
CONDUCTOR (CTC) FOR TRACTION TRANSFORMERS (LOCO/EMU/MEMU/TRAIN SETS)**

Sl. No.	Bare Copper Size (mm)	Rad. Nomex Insul. (mm)	Enamel Grade	Max Covered size (mm)		No. Of Reels	Length per Reel (Mtr.)	Weight (KG)		Weight Per Reel (Kg)	Remark
								Bare	Covered		
1.	21//1.7 X 3.4	0.30	M	21.81	8.32	04	295	1194	1235.5	308.87	FOR 6531 KVA (TR & FL)
2.	13//1.8 X 4.0	0.30	M	14.83	9.52	01	95	75	77.5	77.5	FOR 6531 KVA (BUR)
3.	21//1.7 X 3.4	0.30	M	21.81	8.32	04	234	947	980	245	FOR 7775 KVA (TR)
4.	25//1.7 X 3.4	0.30	M	25.67	8.32	02	56	135	140	70	FOR 7775 KVA (FL)
5.	13//1.8 X 4.0	0.30	M	14.83	9.52	01	95	75	77.5	77.5	FOR 7775 KVA (BUR)
6.	25//1.55 X 3.35	0.25	M	23.62	8.12	02	91	202	216	108	FOR 7775 KVA (HL1 & HL2)
7.	19//1.8 X 3.6	0.30	M	20.89	8.72	01	130	134	138	138	FOR 6531/7775 KVA (SOD)
8.	21//1.7 X 5.2	0.3	Gr-II	21.26	11.82	08	127	1608	1646	205.75	FOR 9035 KVA (TR)
9.	19//1.8 X 4.0	0.3	Gr-II	20.4	9.4	01	136	157	162	162	FOR 9035 KVA (SOD)
10.	13//1.8 X 4.0	0.3	Gr-II	14.83	9.52	01	90	71	73.5	73.5	FOR 9035 KVA (BUR)
11.	25//1.7 X 3.4	0.3	Gr-II	25.67	8.32	01	103	124	128	128	FOR 9035 KVA (FL)
12.	9//1.6 X 6.8	0.15	Gr-I	14.76	9.28	04	97	331	340	85	FOR 2370 KVA (TR)
13.	11//1.6 X 6.2	0.15	Gr-I	13.52	11.02	02	101	192	196	98	FOR 2370 KVA (AUX)
14.	7 // 2.0 X 9.2	0.15	Gr-I	19.46	9.14	02	107	240	244	122	FOR 1276 /1578 KVA (TR)

NOTE TO SUPPLIERS:

- Conductor must confirm to CPS-AA28129/ Rev-04 and nominal value of 0.1% Proof stress shall be 135 Mpa with $\pm 10\%$ tolerance.
- For conductor Sl.no. - 1-13, the insulation shall be enamel covering to CPS-AA28144/ Rev-03 and Aramid (Nomex) paper to CPS-AA22901/ Rev-05 in place of Kraft paper. Winding mould diameter shall be 330 mm for IT-1-11, 209 mm for IT-12 & 539 mm for IT-13.
- For conductor Sl.no.-14, the insulation shall be dual enamel covering to IEC-60317-29 (Polyester or Polyesterimide over coated with polyamide-imide) and Nomex paper to CPS-AA22901/ Rev-03 in place of Kraft paper. Winding mould diameter shall be 199 mm.
- Source Test certificate of Nomex paper to be supplied along with the supply.
- Length of reel is very important and in no case it should be less than the specified.
- Length of conductor and weight must be marked clearly on each drum.


 11/1/24
(नीरज वार्शेय)
(NEERAJ VARSHNEY)
 डी.डी. जनरल मैनेजर (ट्रान्सफार्मर इंज.)
 डी.डी. जनरल मैनेजर (ट्रान्सफार्मर इंज.)



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
(A Govt of India undertaking)
Material Management

SAMPLE CALCULATION FOR PO RATE FOR INDIGENOUS BIDDER AGAINST ENQUIRY
NO. E06240006 SAMPLE BASIS

1	If PO Qty	10000 Kg
2	Covering of Paper	With Normal density TUP Paper
3	Total weight of covering paper shall be given in Technical Annexure along with individual PO	800 Kg
4	Rate schedule : PO rate on F.O.R. destination basis shall consist A) Copper Rate B) Fabrication Rate C) Extra Charges for TUP paper covering as below:	
A)	Copper Rate shall be calculated as below	
i	LME CSP Rate for Copper	As per Annexure-I clause 7
ii	Exchange rate (SBI TT Selling rate US\$ - INR)	
iii	Premium, USD/MT	190
iv	*Multiplication factor	1.055*
v	Copper rate Rs./Kg=	$\{(LME\ CSP\ Rate + Premium) \times Multiplication\ factor \times Exchange\ rate\} / 1000$
B)	Fabrication rate in Rs. / Kg basis: If bidder has quoted X Rs/Kg as a fabrication rate.	
	Fabrication rates (in figure)	"X"
Extra Charges		
C)	As per tender Differential rate for TUP paper is Rs 150 /Kg	
	Differential rate for the use of TUP Paper in Rs/Kg	$800 * 150 / 10000$
D)	PO Rate (A+B+C) in Rs/kg	Copper Rate + X (Fabrication rate) + $(800 * 150 / 10000)$
If Content of TUP paper quantity is zero then extra charges shall be remains "0"		



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120

(A Govt of India undertaking)

Material Management

SAMPLE CALCULATION FOR PO RATE FOR FOREIGN BIDDER AGAINST ENQUIRY NO. E06240006 SAMPLE BASIS

1	If PO Qty	10000 Kg
2	Covering of Paper	With Normal density TUP Paper
3	Total weight of covering paper shall be given in Technical Annexure along with individual PO	800 Kg
4	Rate schedule : PO rate on F.O.R. destination basis shall consist A) Copper Rate B) Fabrication Rate C) Extra Charges for TUP paper covering as below:	
A)	Copper Rate shall be calculated as below	
i	LME CSP Rate for Copper US\$/ MT	As per Annexure-I clause 7
ii	Exchange rate (US\$ - Currency)	
iii	Premium, USD/MT	190
		FIXED (Applicable for all Items)
iv	Copper rate Currency./Kg=	$\{(LME\ CSP\ Rate + Premium) \times Exchange\ rate\} / 1000$
	Fabrication rate in Currency. / Kg basis: If bidder has quoted "X" Currency / Kg as-a fabrication rate.	
B)	Fabrication rates (in figure)	"X"
	Extra Charges	
C)	As per tender Differential rate for TUP paper is 1.79 US \$ / Kg and that will be converted in to currency per Kg as on Part-I bid opening date If it comes 1.85 Currency / Kg	
	Differential rate for the use of TUP Paper in Currency / Kg	$800 * 1.85 / 10000$
D)	PO Rate (A+B+C) in Currency /kg	$Copper\ Rate + X\ (Fabrication\ rate) + (800 * 1.85 / 10000)$
If Content of TUP paper quantity is zero then extra charges shall be remains "0"		

TECHNICAL TERMS & CONDITIONS FOR PURCHASE OF COPPER WINDING WIRE – CONTINUOUSLY TRANSPOSED COPPER WIRE (CTC) ITEM #1 AND ITEM #2 ON FIRM QTY BASIS & FINISHED BASIS.

1. **Technical Parameters:** CTC Item #1 and Item #2 to be supplied under this enquiry shall strictly conform to the following purchase / technical specifications.

Sl	Type of CTC	Specification	Special Requirement
i.	Proof Stress with Epoxy coating / Glued Copper CTC (i.e. CTC with proof stress copper strips with PVA enamel and with bonding layer)	AA28129 Rev. 04, TRE036 Rev. 08	The conductor proof strength of conductor shall be 0.2% Copper strips / strands/CTC, must comply to IEC 60317-0-2 Edition 4.0, 2020-06 for all parameters including following parameters. 1. Dimensional tolerance and corner radius. 2. Proof strength and resistivity. 3. Breakdown voltage

Continuously Cast Copper bar / rods i.e Raw material for manufacturing bare copper strips:

Sl	Copper	Specification no.
i.	Electrolytic Tough Pitch Copper Wire Bars / Ingots / continuously cast wire rods / Extruded Sections.	AA12024 Rev. 07 (complying to latest standards referred in AA12024)

Insulating Paper for use as conductor covering.

Sl.	Type of paper	Specification no.
i.	Kraft insulating paper – High air permeability (for use as covering)	AA21111 Rev. 06. The kraft paper shall completely comply to all parameters as per grade 5B2-2H1 of IEC 554-3-5 for all thickness size of paper.
ii.	Normal Density Thermally upgraded paper (for use as covering)	TRE218 Rev. 01

2. The Copper CTC should be free from instability / twisting / entanglement / tilting when unwound from the drum / payoff.
3. The bidder has to comply BHEL Quality Assurance Plan (QAP) no. QC/TCB/QAP/BO/55 Rev. 01. In addition to BHEL Quality Assurance Plan, BHEL's customer Quality Assurance Plan (QAP) shall also to be adhered by the suppliers. Copy of NTPC and POWERGRID approved QAP attached herewith for reference only.

Me
23/05/24

Gaurani

Annexure-II

4. The bidders shall guarantee that curing properties and shelf life of the Epoxy Coated Copper CTC shall not be affected by transportation in GP container in the ambient temperature up to 50°C.
5. **Inspection of material:** BHEL reserves the right to get the material at source inspected through its own Engineers / Customer / Third party (TP) inspection agency (e.g. Lloyds, Bureau Veritas, SGS etc.). Seller shall submit the test certificates covering test results for each size of CTC as required in our purchase / technical specification. Test certificates for Copper, insulating paper, Enamel etc, and CTC shall be submitted along with each supply, complete in all respect and complying to Technical specification, BHEL Quality Assurance Plan (QAP) and BHEL's customer Quality Assurance Plan.
6. **Guarantee:** Copper CTC under this tender shall be free from any kind of manufacturing defect and shall be under guarantee for a period of 12 months from the date of dispatch or until testing of transformers using CTC supplied under this enquiry, whichever occurs earlier.
7. Drum width i.e. dimension 'D' of Annexure-I of spec AA28129 shall be 440 mm (max.). The supplier can select drum designation 8 or 9 from Annexure-I of spec 28129 depending upon the 'length per drum' requirement of CTC to be supplied.
8. Bidders shall mark on each drum/package of CTC the following data:
BHEL Specification no. , BHEL order no. Gross and net weight, Weight of empty, bobbin/drum, Weight of other packing material, Dimension of drum, date of manufacture etc.

MK
23/05/24
Milind Kulkarni
AGM, TRE & FES

G S Lalwani
G S Lalwani
AGM (TRE)

**Pre-Qualifying Requirement for Procurement of 'Conitnuously Transposed Copper Cable (CTC)' – PI:1216240254/**

Sl. No.	REQUIREMENT	Bidder's Response																				
1	<p>a) Bidders should be the MANUFACTURER OR AUTHORIZED DISTRIBUTER of 'Conitnuously Transposed Copper Cable (CTC)' In case of Authorised Distributor Trader, bidder shall provide the valid Authorization Certificate / Agreement copy from OEM. Undertaking from OEM that they will give full technical support during execution of the contract is also required.</p> <p>b) Total tender quantity shall be required in the lots as indicated in the enquiry. Bidder to commit supply of atleast 50% Qty. of tender Qty. of each item for which they have quoted. Lot wise minimum Qty for each lot to be committed by the bidder bidder is 160MT for Item 1, 20 MT for Item 2, 50MT for Item 3 and 6.25MT for Item 4. Non-Compliance to this will lead to offer rejection.</p>	<div><input type="checkbox"/> YES</div> <div><input type="checkbox"/> Submitted</div> <div><input type="checkbox"/> Confirmed</div>																				
2	<p>SUPPLY EXPERIENCE:-</p> <p>Bidders should have experience of having supplied "Conitnuously Transposed Copper Cable (CTC)" (henceforth called "Goods") to any of the customer listed below.</p> <p>To qualify, the bidder should have executed minimum two Orders which will be valid for all items (put together) for which bidders have quoted of 'Goods' in the last Five years till the date of Part I (Techno-commercial) Bid opening to any of customer as listed below.</p> <p>Bidder to submit copies of supply orders, Tax Invoices / Completion Certificate of same order as a documentary proof for minimum quantum as mentioned in clause 3</p> <p>The Customer should be any of the following in the last Five years. (PI tick ✓ as applicable)</p> <p>1. PSU- State/ Central Govt.</p> <p>2. Government - State/ Central</p> <p>3. BHEL / ABB / Siemens / Mitsubishi Electric / Toshiba / TBEA / Alstom / Crompton Greaves / Bharat Bijlee / TELK / EMCO / T & R / Voltamp Trfr / Imp Power / Vijay Electrical / Technical Associates / Schneider Electric / Andrew Yule / Skipper Ltd./ High Volt.</p> <p>4. ABB Limited (Switzerland)/ ASTOR TRANSFORMER A.S (Turkey)/ Bemag Transformer, Inc. (Canada)/ Bowers Electricals Ltd. (UK)/ Changzhou XD Transformer Co., Ltd. (China)/ DAIHEN Corporation (Japan)/ EFACEC Group (Portugal)/ GE Grid Solutions (USA)/ Hammond Power Solutions, Inc. (Canada)/ Howard Industries, Inc. (USA)/ Hyosung Heavy Industries (South Korea)/ Hyundai Electric & Energy Systems Co., Ltd. (South Korea)/ Imefy Group (Spain)/ JSHP Transformer (China)/ KONCAR Group (Croatia)/ Mitsubishi Electric Corporation (Japan)/ Olsun Electrics Corporation (USA)/ Schneider Electric SA (France)/ SGB-SMIT Group (Germany)/ SGB-SMIT Power Matla (South Africa)/ Shihlin Electric & Engineering Corporation (Taiwan)/ Siemens AG (Germany)/ SPX Transformer Solutions, Inc. (USA)/ TBEA Co., Ltd. (China)/ Toshiba Energy Systems & Solutions Corporation (Japan)/ Wilson Power Solutions (UK)/ Wilson Transformer Company (Australia)/ Winder Power Ltd. (UK)</p> <p>"or"</p> <p>5. Transformer manufacturer. (Bidder to submit Self Declaration on their Letter Head that they have supplied CTC to Transformer Manufacturers)</p>	<div><input type="checkbox"/> YES</div> <div><input type="checkbox"/> PI tick✓ as applicable</div> <div><input type="checkbox"/></div> <div><input type="checkbox"/></div>																				
3	<p>Minimum Quantum-</p> <p>For qualifying, bidder should have supplied minimum 10% (For Non-MSEs) or 7% (For MSEs) of NIT quantity of the item(s) for which they have quoted.</p> <p>Vendor to submit details of executed PO.</p> <table><thead><tr><th>Customer Name</th><th>Order No. & Date</th><th>Qty. supplied in UoM</th><th>Tax Invoice / Completion Certificate & Date</th><th>Remark, if any</th></tr></thead><tbody><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>	Customer Name	Order No. & Date	Qty. supplied in UoM	Tax Invoice / Completion Certificate & Date	Remark, if any																
Customer Name	Order No. & Date	Qty. supplied in UoM	Tax Invoice / Completion Certificate & Date	Remark, if any																		
4	<p>It is better / desired that New vendors who are not registered with BHEL, Jhansi should submit duly filled "Supplier Registration Form (SRF)" along with the requested documents. The SRF is available on line on our website www.bhel.com. However the same is not mandatory.</p>	<div><input type="checkbox"/> Document Submitted</div>																				

- We agree that our bid is liable to be rejected in case (a) the relevant information is not filled, (b) documentation is incomplete, (c) there are false declarations, and (d) if we do not meet the PQR.
- Supporting documents for the details filled above have been submitted.

(Signature of the Supplier with Name, Designation & Seal)

28/5/24
AGM(TRP)

28/05/2024
AGM(CMM/TMM)

AGM(Q BE)

Prepared by (Indentor)

28/05/24
AGM(TRE FES)

**Techno – commercial format for procurement of CTC for indigenous vendors against
tender E06240006**

SL. NO.	DESCRIPTION	BIDDERS RESPONSE																																				
1	Name of the supplier																																					
2	Name & designation of the contact person																																					
3	Address of the works at which inspection / delivery is offered.																																					
4	Complete acceptance to Technical Terms & conditions including Technical/ Purchase Specs as mentioned in Annexure. – I.	<input type="checkbox"/> Accepted																																				
5	Complete acceptance to all terms & conditions of tender enquiry as mentioned in Annexure.-I	<input type="checkbox"/> Accepted																																				
6	*Acceptance for the final inspection of material after receipt at BHEL works and results shall be binding on the supplier.	<input type="checkbox"/> Accepted																																				
7	Delivery period from the date of LOI <table border="1"> <thead> <tr> <th>LOTS</th><th>Delivery from LOI</th><th>ITEM 1 (QTY IN MT)</th><th>ITEM 2(QTY IN MT)</th><th>ITEM 3(QTY IN MT)</th><th>ITEM 4(QTY IN MT)</th></tr> </thead> <tbody> <tr> <td>1</td><td>60</td><td>320</td><td>40</td><td>100</td><td>12.5</td></tr> <tr> <td>2</td><td>106</td><td>320</td><td>40</td><td>100</td><td>12.5</td></tr> <tr> <td>3</td><td>152</td><td>320</td><td>40</td><td>100</td><td>12.5</td></tr> <tr> <td>4</td><td>198</td><td>320</td><td>40</td><td>100</td><td>12.5</td></tr> <tr> <td>5</td><td>244</td><td>320</td><td>40</td><td></td><td></td></tr> </tbody> </table>	LOTS	Delivery from LOI	ITEM 1 (QTY IN MT)	ITEM 2(QTY IN MT)	ITEM 3(QTY IN MT)	ITEM 4(QTY IN MT)	1	60	320	40	100	12.5	2	106	320	40	100	12.5	3	152	320	40	100	12.5	4	198	320	40	100	12.5	5	244	320	40			<input type="checkbox"/> Accepted
LOTS	Delivery from LOI	ITEM 1 (QTY IN MT)	ITEM 2(QTY IN MT)	ITEM 3(QTY IN MT)	ITEM 4(QTY IN MT)																																	
1	60	320	40	100	12.5																																	
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5	244	320	40																																			
8	Applicable GST (mention NA if not applicable)																																					
	A. IGST@ %																																				
	B. CGST @ %																																				
	C. SGST @ %																																				
9	*Acceptance to Pricing Terms as per sl.no: 7 of Annexure – I.	<input type="checkbox"/> Accepted																																				
10	*Acceptance to bid evaluation criterion at sl.no.5 of Annexure – I	<input type="checkbox"/> Accepted																																				
11	Acceptance to <u>Delivery Terms on F.O.R destination basis as per clause 17 of Annexure-I</u>	<input type="checkbox"/> Accepted																																				
12	Acceptance of penalty @ ½ % per week or part there of subject to max. of 10% for delay in supply beyond agreed delivery as per sl.no 22 of Annexure – I.	<input type="checkbox"/> Accepted																																				
13	Acceptance to payment terms as per sl.no 16 of Annexure – I. 100% payment within 90 days of receipt (45 days for MSE registered suppliers as per relevant act n force), subject to acceptance of material at BHEL.	<input type="checkbox"/> Accepted MSE's <input type="checkbox"/> Accepted 90day																																				
14	*Acceptance to rejection replacement clause as per sl.no.14 of Annexure - I.	<input type="checkbox"/> Accepted																																				
15	Validity of offer to be reckoned from the date of bid Part-I opening and it will be 120 days from the date of techno-commercial bid opening date (part-1) for finalization of the contract	<input type="checkbox"/> Accepted																																				
16	*Acceptance to quantity distribution as per sl.no 10 of Annexure – I.	<input type="checkbox"/> Accepted																																				
17	Un-Price bid (Annexure – VIII) submitted with 'Q (Quoted)' OR 'NQ (Not Quoted)' status with bid part – I.	<input type="checkbox"/> Yes																																				
18	Acceptance to short closure clause as per sl.no. 19of Annexure – I.	<input type="checkbox"/> Accepted																																				
19	*Integrity Pact submitted in original duly signed	<input type="checkbox"/> Yes																																				
20	Acceptance to Warranty, Corresponding Repairs / Replacement of Goods, and Deductions as per clause 18 of Annexure-I.	<input type="checkbox"/> Accepted																																				
21	The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.	<input type="checkbox"/> Accepted																																				
22	In case of any inconsistency between offers of supplier and the accepted terms and conditions in this sheet, the terms and conditions of this sheet shall prevail.	<input type="checkbox"/> Accepted																																				

*In case of non-acceptance to these clauses, your bid may be liable for rejection.

Signature with name of the Authorized Signatory

**Techno – commercial format for procurement of CTC for foreign vendors against tender
E06240006**

SL. NO.	DESCRIPTION	TO BE FILLED-IN BY THE BIDDER																																				
1	Name of the supplier:																																					
2	Name & designation of the contact person: Please submit the separate sheet in which Name of the contact person, contact details like email id, Phone number, mobile number etc.	<input type="checkbox"/> Submitted																																				
3	Address of the works at which material shall be supplied.																																					
4	Currency of quotation:																																					
5	Complete acceptance to Technical Terms & conditions including Technical/ Purchase Specs as mentioned in Annexure. – I.	<input type="checkbox"/> Accepted																																				
6	Complete acceptance to all terms & conditions of tender enquiry as mentioned in Annexure.-I	<input type="checkbox"/> Accepted																																				
7	*Acceptance for the final inspection of material after receipt at BHEL works and results shall be binding on the supplier.	<input type="checkbox"/> Accepted																																				
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4	198	320	40	100	12.5																																	
5	244	320	40																																			
9	All taxes & duties applicable outside India will be borne by supplier	<input type="checkbox"/> Accepted																																				
10	*Acceptance to Pricing Terms as per sl.no: 7 of Annexure – I.	<input type="checkbox"/> Accepted																																				
11	*Acceptance to bid evaluation criterion at sl.no.5 of Annexure – I	<input type="checkbox"/> Accepted																																				
12	Acceptance to <u>Delivery Terms on F.O.R destination basis as per clause 17 of Annexure-I for foreign bidders</u> (Delivery point- ICD Mandideep dry port)	<input type="checkbox"/> Accepted																																				
13	Acceptance of penalty @ ½ % per week or part thereof subject to max. of 10% for delay in supply beyond agreed delivery as per sl.no 22 of Annexure – I.	<input type="checkbox"/> Accepted																																				
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21	Acceptance to Warranty, Corresponding Repairs / Replacement of Goods, and Deductions as per clause 18 of Annexure-I.	<input type="checkbox"/> Accepted																																				
22	The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.	<input type="checkbox"/> Accepted																																				
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*In case of non-acceptance to these clauses, your bid may be liable for rejection.



Signature with name of the Authorized Signatory



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
(A Govt of India undertaking)
Material Management

Annexure-VI

PART -B PRICE BID

PRICE BID FOR INDIGENOUS BIDDER, FOR ENQUIRY NO. E06240006 FOR ITEM NO-01

1	Name & Address of the Supplier	
2	Enquiry Item No.	1
3	Items Qty, in MT	1600
4	Item Description:	Upto 43// Strands and Cross Section Area of individual strand 30 sq.mm max. Proof Stress, Epoxy coated/Glued CTC (with Kraft Paper covered) as per Annex-II Rev-00.
5	Rate schedule : As per Annexure Clause no-07 of Annexure-I	
A)	Copper Rate shall be calculated as per Clause no-07 of Annexure-I	
B)	Fabrication rate in Rs. / kg basis: Bidder to quote	
	Fabrication rates (in figure)	
	Fabrication rates (in words)	
C)	PO Rate shall be calculated as Clause no-07 of Annexure-I	

(Signature of the Supplier with Name, Designation & Seal)



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
(A Govt of India undertaking)
Material Management

Annexure-VI

PART -B PRICE BID

PRICE BID FOR INDIGENOUS BIDDER, FOR ENQUIRY NO. E06240006 FOR ITEM NO-02

1	Name & Address of the Supplier	
2	Enquiry Item No.	2
3	Items Qty, in MT	200
4	Item Description:	Above 43// and Upto 65// Strands , Cross Section Area of individual st rand 30 sq.mm max. Proof Stress, Epoxy coated/Glued CTC (with Kraft Paper covered) as per Annex-II Rev-00.
5	Rate schedule : As per Annexure Clause no-07 of Annexure-I	
A)	Copper Rate shall be calculated as per Clause no-07 of Annexure-I	
B)	Fabrication rate in Rs. / kg basis: Bidder to quote	
	Fabrication rates (in figure)	
	Fabrication rates (in words)	
C)	PO Rate shall be calculated as Clause no-07 of Annexure-I	

(Signature of the Supplier with Name, Designation & Seal)



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
(A Govt of India undertaking)
Material Management

Annexure-VI

PART -B PRICE BID

PRICE BID FOR INDIGENOUS BIDDER, FOR ENQUIRY NO. E06240006 FOR ITEM NO-03

1	Name & Address of the Supplier	
2	Enquiry Item No.	3
3	Items Qty, in MT	400
4	Item Description:	From 14// to 27// Strands, cross section area of individual strand 20 sq.mm max. Proof stress nomex covered CTC. Typical sizes generally as per Annex-TRE/FRT/CPR Rev-02. Nominal value of 0.1% Proof stress shall be 135 Mpa with +10% and -10 % tolerance.
5	Rate schedule : As per Annexure Clause no-07 of Annexure-I	
A)	Copper Rate shall be calculated as per Clause no-07 of Annexure-I	
B)	Fabrication rate in Rs. / kg basis: Bidder to quote	
	Fabrication rates (in figure)	
	Fabrication rates (in words)	
C)	PO Rate shall be calculated as Clause no-07 of Annexure-I	

(Signature of the Supplier with Name, Designation & Seal)



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
(A Govt of India undertaking)
Material Management

Annexure-VI

PART -B PRICE BID

PRICE BID FOR INDIGENOUS BIDDER, FOR ENQUIRY NO. E06240006 FOR ITEM NO-04

1	Name & Address of the Supplier	
2	Enquiry Item No.	4
3	Items Qty, in MT	50
4	Item Description:	Up to 13// Strands, cross section area of individual strand 20 sq.mm max. Proof stress nomex covered CTC. Typical sizes generally as per Annex-TRE/FRT/CPR Rev-02. Nominal value of 0.1% Proof stress shall be 135 Mpa with +10% and -10% tolerance.
5	Rate schedule : As per Annexure Clause no-07 of Annexure-I	
A)	Copper Rate shall be calculated as per Clause no-07 of Annexure-I	
B)	Fabrication rate in Rs. / kg basis: Bidder to quote	
	Fabrication rates (in figure)	
	Fabrication rates (in words)	
C)	PO Rate shall be calculated as Clause no-07 of Annexure-I	

(Signature of the Supplier with Name, Designation & Seal)



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
(A Govt of India undertaking)
Material Management

Annexure-VII

PART -B PRICE BID

PRICE BID FOR FOREIGN BIDDER, FOR ENQUIRY NO. E06240006 FOR ITEM NO-01

1	Name & Address of the Supplier	
2	Enquiry Item No.	1
3	Items Qty, in MT	1600
4	Item Description:	Upto 43// Strands and Cross Section Area of individual strand 30 sq.mm max. Proof Stress, Epoxy coated/Glued CTC (with Kraft Paper covered) as per Annex-II Rev-00.
5	Rate schedule : As per Annexure Clause no-07 of Annexure-I	
A)	Copper Rate shall be calculated as per Clause no-07 of Annexure-I	
B)	Fabrication rate in Currency. / kg : Bidder to quote	
	Name of Currency	
	Fabrication rates (in figure)	
	Fabrication rates (in words)	
C)	PO Rate shall be calculated as Clause no-07 of Annexure-I	

(Signature of the Supplier with Name, Designation & Seal)



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
(A Govt of India undertaking)
Material Management

Annexure-VII

PART -B PRICE BID

PRICE BID FOR FOREIGN BIDDER, FOR ENQUIRY NO. E06240006 FOR ITEM NO-02

1	Name & Address of the Supplier	
2	Enquiry Item No.	2
3	Items Qty, in MT	200
4	Item Description:	Above 43// and Upto 65// Strands , Cross Section Area of individual strand 30 sq.mm max. Proof Stress, Epoxy coated/Glued CTC (with Kraft Paper covered) as per Annex-II Rev-00.
5	Rate schedule : As per Annexure Clause no-07 of Annexure-I	
A)	Copper Rate shall be calculated as per Clause no-07 of Annexure-I	
B)	Fabrication rate in Currency. / kg : Bidder to quote	
	Name of Currency	
	Fabrication rates (in figure)	
	Fabrication rates (in words)	
C)	PO Rate shall be calculated as Clause no-07 of Annexure-I	

(Signature of the Supplier with Name, Designation & Seal)



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
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Material Management

Annexure-VII

PART -B PRICE BID

PRICE BID FOR FOREIGN BIDDER, FOR ENQUIRY NO. E06240006 FOR ITEM NO-03

1	Name & Address of the Supplier	
2	Enquiry Item No.	3
3	Items Qty, in MT	400
4	Item Description:	From 14// to 27// Strands, cross section area of individual strand 20 sq.mm max. Proof stress nomex covered CTC. Typical sizes generally as per Annex-TRE/FRT/CPR Rev-02. Nominal value of 0.1% Proof stress shall be 135 Mpa with +10% and -10 % tolerance.
5	Rate schedule : As per Annexure Clause no-07 of Annexure-I	
A)	Copper Rate shall be calculated as per Clause no-07 of Annexure-I	
B)	Fabrication rate in Currency. / kg : Bidder to quote	
	Name of Currency	
	Fabrication rates (in figure)	
	Fabrication rates (in words)	
C)	PO Rate shall be calculated as Clause no-07 of Annexure-I	

(Signature of the Supplier with Name, Designation & Seal)



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
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Material Management

Annexure-VII

PART -B PRICE BID

PRICE BID FOR FOREIGN BIDDER, FOR ENQUIRY NO. E06240006 FOR ITEM NO-04

1	Name & Address of the Supplier	
2	Enquiry Item No.	4
3	Items Qty, in MT	50
4	Item Description:	Up to 13// Strands, cross section area of individual strand 20 sq.mm max. Proof stress nomex covered CTC. Typical sizes generally as per Annex-TRE/FRT/CPR Rev-02. Nominal value of 0.1% Proof stress shall be 135 Mpa with +10% and -10% tolerance.
5	Rate schedule : As per Annexure Clause no-07 of Annexure-I	
A)	Copper Rate shall be calculated as per Clause no-07 of Annexure-I	
B)	Fabrication rate in Currency. / kg : Bidder to quote	
	Name of Currency	
	Fabrication rates (in figure)	
	Fabrication rates (in words)	
C)	PO Rate shall be calculated as Clause no-07 of Annexure-I	

(Signature of the Supplier with Name, Designation & Seal)



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
(A Govt of India undertaking)
Material Management

Annexure-VIII

UNPRICE BID

UNPRICE BID FOR INDIGENOUS BIDDER, FOR ENQUIRY NO. E06240006

1	Name & Address of the Supplier				
2	Enquiry item no	1	2	3	4
	Items Qty, in MT	1600	200	400	50
3	Rate schedule : PO rate on F.O.R. destination basis shall consist A) Copper Rate and B) Fabrication Rate as below:				
A)	Copper Rate shall be calculated as below				
I	LME CSP Rate for Copper	As per clause 7 of Annexure-I.			
iii	Exchange rate (SBI TT Selling rate US\$ - INR)				
iii	Premium, USD/MT	190	FIXED (Applicable for all items)		
Iv	*Multiplication factor	1.055*	* As per prevailing notional customs duty, presently it is 1.055 (Applicable for all items)		
V	Copper rate Rs./Kg=	{(LME CSP Rate + Premium) x Multiplication factor x Exchange rate}/1000			
B)	Fabrication rate in Rs. / Kg basis: Bidder to mark <input checked="" type="checkbox"/> If quoted for that item else <input type="checkbox"/> if not quoted for that particular items.				
	Fabrication rates (in figure)	Quoted	Quoted	Quoted	Quoted
	Fabrication rates (in words)	Quoted	Quoted	Quoted	Quoted

(Signature of the Supplier with Name, Designation & Seal)

Contact person Name:	
Email id	
Phone number:	
Mobile number:	



BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120
(A Govt of India undertaking)
Material Management

Annexure-VIII

UNPRICE BID

UNPRICE BID FOR FOREIGN BIDDER, FOR ENQUIRY NO. E06240006

1	Name & Address of the Supplier				
2	Enquiry item no	1	2	3	4
	Items Qty, in MT	1600	200	400	50
3	Rate schedule : PO rate on F.O.R. destination basis shall consist A) Copper Rate and B) Fabrication Rate as below:				
A)	Copper Rate shall be calculated as below				
I	LME CSP Rate for Copper	As per clause 7 of Annexure-I.			
II	Premium, USD/MT	190	FIXED (Applicable for all items)		
III	Copper rate Currency/ Kg=	{(LME CSP Rate + Premium) x Exchange rate}/1000			
B)	Fabrication rate in Currency / Kg basis: Bidder to mark <input checked="" type="checkbox"/> if quoted for that item else <input type="checkbox"/> if not quoted for that particular items.				
	Fabrication rates (in figure)	Quoted	Quoted	Quoted	Quoted
	Fabrication rates (in words)	Quoted	Quoted	Quoted	Quoted

(Signature of the Supplier with Name, Designation & Seal)

Contact person Name:	
Email id	
Phone number:	
Mobile number:	

Annexure-IX

INTEGRITY PACT**Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____ (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for Procurement of CTC against tender enquiry E-06240006.
_____ (hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint panel of Independent External Monitor(s) (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
 - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
 - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during participation in the tender process and during the contract execution.

- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and shall await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process, terminate the contract, if already awarded, exclude from future business dealings and/ or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- 4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above, the Bidder(s)/ Contractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.



Section 5 - Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)

- 6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.
- 6.2 In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor(s) and ensure that all Sub-contractors also sign the Integrity Pact.
- 6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 -Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact.
- 8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed.
- 8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.



- 8.5 The advisory role of IEMs is envisaged as that of a friend, philosopher and guide. The advice of IEMs would not be legally binding and it is restricted to resolving issues raised by a Bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some Bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.
- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process or during execution of Contract, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to the CMD, BHEL at the earliest. They may also send their report directly to the CVO, in case of suspicion of serious irregularities requiring legal/ administrative action. Only in case of very serious issue having a specific, verifiable Vigilance angle, the matter should be reported directly to the Commission. IEMs will tender their advice on the complaints within 30 days.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.
- 8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Principal should be looked into by the CVO of the Principal.
- 8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code / Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs. Issues like warranty/ guarantee etc. shall be outside the purview of IEMs.
- 8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.
- 8.13 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

- 9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties till the final completion of contract for successful Bidder, and for all other Bidders 6 months after the Contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.
- 9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.



Section 10 - Other Provisions

- 10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.
- 10.2 Changes and supplements as well as termination notices need to be made in writing.
- 10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.
- 10.4 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 10.5 Only those bidders / contractors who have entered into this Integrity Pact with the Principal would be competent to participate in the bidding. In other words, entering into this Integrity Pact would be a preliminary qualification.
- 10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as the terms & conditions of the Contract. The fees/expenses on dispute resolution through mediation shall be shared by both the parties. Further, the mediation proceedings shall be confidential in nature and the parties shall keep confidential all matters relating to the mediation proceedings including any settlement agreement arrived at between the parties as outcome of mediation. Any views expressed, suggestions, admissions or proposals etc. made by either party in the course of mediation shall not be relied upon or introduced as evidence in any further arbitral or judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of mediation proceedings. Neither of the parties shall present IEMs as witness in any Alternative Dispute Resolution or judicial proceedings in respect of the dispute that was subject of mediation.

For & On behalf of _____

(Office Seal)

Place Jhansi

Date 17/05/24

Witness: _____

(Name & Address) _____

For & On behalf of the Bidder/ Contractor

(Office Seal)

Witness: _____

(Name & Address) _____

Clause on IP in the tender

Integrity Pact (IP)

- (a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SI	IEM	Email
1.	Shri Otem Dai, IAS (Retd.)	iem1@bhel.in
2.	Shri Bishwamitra Pandey, IRAS (Retd.)	iem2@bhel.in
3.	Shri Mukesh Mittal, IRS (Retd.)	iem3@bhel.in

- (b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
- (c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s):

(1)
Name: NAVEEN KUMAR
Deptt: CMM
Address: BHEL JHANSI
Phone: (Landline/ Mobile)
Email: n.kumar@bhel.in
Fax: _____

(2)
Name: [Signature]
Deptt: CMM
Address: BHEL JHANSI
Phone: (Landline/ Mobile)
Email: laxman@bhel.in
Fax: _____

Annexure-X

Model Clauses for Tenders

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
- II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- III. "Bidder from a country which shares a land border with India" for the purpose of this Order means: -
 - a. An entity incorporated, established or registered in such a country; or
 - b. A subsidiary of an entity incorporated, established or registered in such a country; or
 - c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
 - d. An entity whose *beneficial owner* is situated in such a country; or
 - e. An Indian (or other) agent of such an entity; or
 - f. A natural person who is a citizen of such a country; or
 - g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above
- IV. The *beneficial owner* for the purpose of (iii) above will be as under:
 1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation—

 - a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company;

- b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;
2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership or entitlement to more than fifteen percent of capital or profits of the partnership;
 3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;
 4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;
 5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.
- VI. *[To be inserted in tenders for Works contracts, including Turnkey contracts]* The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

Model Certificate for Tenders

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the

.. I

Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

Conflict of Interest:

"A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. The bidder found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:

- a) they have controlling partner (s) in common; or
- b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or
- c) they have the same legal representative/agent for purposes of this bid; or
- d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or
- e) Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly / Assemblies from one bidding manufacturer in more than one bid; or
- f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in particular tender enquiry. One manufacturer can also authorise only one agent/dealer. There can be only one bid from the following:
 - 1. The principal manufacturer directly or through one Indian agent on his behalf; and
 - 2. Indian/foreign agent on behalf of only one principal.or
- g) A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid; or
- h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business. "

Handwritten signature

<p align="center">PRODUCT PURCHASING SPECIFICATION TRANSFORMER ENGINEERING DEPARTMENT BHEL BHOPAL</p>	<p>Specification No. TRE 218 Page 1 of 1 Page Rev. 01 Dt. : 08.09.2018</p>
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THERMALLY UPGRADED INSULATING KRAFT PAPER

1. **General** - This specification governs the quality of high density thermally upgraded insulating kraft paper for electrical purposes made entirely from soft-wood pulp manufactured by the sulphate process and upgradation to meet thermal stress. The kraft paper shall be dyed in green colour & shall be free from metallic particles. The material in insulating mineral oil shall have temperature index of at least 120.
2. **Usage** - This paper finds use in power transformer windings.
3. **Compliance with standards** – IEC:60554-3-5 grade 5A4-1M1 + Thermal upgradation.
4. **Sample for test** – 20 sheets of 300 x 300 mm shall be required for testing. Testing shall be as per IEC:60554-2.
5. **Properties** – Shall be as per Table 1 at page 2.
6. **Test certificates** - Unless otherwise stated, test certificates shall be supplied along with each consignment.

In addition, the supplier shall ensure to send one copy of test certificates along with their dispatch documents to facilitate quick clearance of the material.

The test certificates shall bear the information generally as per Table 1 along with nitrogen content.

7. **Packing & marking** - Packing shall be marked legibly at least with the BHEL spec. no., Order No., Quantity, Thickness & width, net/ gross weight & Date of manufacture.

REV	DATE	ALT CHD	REV-01	DATE 8.9.18	ALT <input checked="" type="checkbox"/> CHD. <i>ll</i>	REV 00	NAME	SIGN	DATE
			COMPLETE SPECIFICATION REVISED.			PREP.	S.Sachdeva	-sd-	17.08.18
						CHD.	M.Kulkarni	-sd-	17.08.18
DWI/TCB/TRE/010									

**PRODUCT PURCHASING SPECIFICATION
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BHEL BHOPAL**

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Table 1 – Properties of thermally upgraded insulating kraft paper

Property	Unit	Min.	Nominal	Max.
Nominal thickness	micron	45 57 68 90	50 63 75 100	55 69 82 110
Grammage				
50 micron	g/m ²	47.5	50	52.5
63 micron		62.0	63	68.0
75 micron		71.5	75	78.5
100 micron		95.0	100	105.0
Apparent bulk density	kg/m ³	950	1000	-
Air permeability	µm/Pa*s	0.05	-	0.10
Moisture content	%	-	-	8.0
Tensile index MD	Nm/g	93.0	-	-
Tensile index CD	Nm/g	35.0	-	-
Elongation MD	%	2.0	-	-
Elongation CD	%	4.0	-	-
Tear index MD			-	-
Up to 75 micron	mN*m ² /g	5.0		
Above 75 micron	mN*m ² /g	6.0		
Tear index CMD			-	-
Up to 75 micron	mN*m ² /g	6.0		
Above 75 micron	mN*m ² /g	7.0		
Electrical strength in Air	kV/mm	8.0	-	-
Ash content	%	-	-	0.5
Conductivity in aqueous extract	mS/m	-	-	4.0
pH in extract	-	6.0	-	8.0
Nitrogen content	%	1.0	-	-

<p align="center">PRODUCT PURCHASING SPECIFICATION TRANSFORMER ENGINEERING DEPARTMENT BHEL BHOPAL</p>	<p>Specification No. TRE 036 Page 1 of 6 Pages Rev. 08 Date : 08.09.2018</p>
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**EPOXY COATED PAPER COVERED CONTINUOUSLY TRANSPOSED COPPER CABLE
(0.1% PROOF STRESS)**

1. This Specification governs the quality of continuously transposed Copper cable exactly similar to specification AA28129 except following modification /additional requirements. The cable shall not be manufactured earlier than 30 days from date of dispatch since it has a limited shelf life.
In case on any conflict between AA28129 & TRE036, TRE036 shall prevail.
2. An extra coating of Semi cured ('B' stage) epoxy enamel shall be given over PVA enamel) on all the conductors. The coating shall be tack-free at room temperature and it shall be able to fully cure when heated at 130°C for 6 hours. The increase in dimension due to epoxy coating shall be $0.06 \text{ mm} \pm 0.02 \text{ mm}$ and due to enamel coating increase in dimensions shall be $0.085 \pm 0.025 \text{ mm}$.
3. Nominal value of 0.1% proof stress of conductor shall be specified on order.
4. Tolerance on overall width and thickness (bare strip + PVA enamel + epoxy) of individual conductor shall be as per Annexure 2 of this document.
5. Paper used for outer coverings shall comply to AA 21111 or as specified in order.
6. Insulation test between strips as per Cl. 12.1 of AA 28129.
7. In order to check the bonding strength of epoxy powder coating , samples after curing should be subjected to "Radial bending test" as per enclosed Annexure-1.
8. Test certificate shall be issued indicating observed and specified values of dimension and test as per Cl. 13 of AA 28129 and Cl. 6 & 7 of TRE: 036. Packing and marking will be as per Cl. 14 of AA 28129. Packing shall be seaworthy and drums should be kept in a container/ Crate to avoid ingress of moisture in transit.

REV 08	DATE 08.9.18	ALT CHD	REV 07	DATE 05.9.18	ALT CHD	-sd- -sd-	REV 04	NAME	SIGN	DATE
Annexure 1 & 2 updated.			Clause 5,6,7,8 of Annexure-2 revised.			PREP	S.K.MAHAJAN	-sd-	09.12.07	
						APPD	J.S.KUNTIA	-sd-	09.12.07	
DWI/TCB/TRE/010										

PRODUCT PURCHASING SPECIFICATION
TRANSFORMER ENGINEERING DEPARTMENT
BHEL BHOPAL

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ANNEXURE-1

RADIAL BENDING STRENGTH TEST FOR EPOXY BONDED CTC CABLE

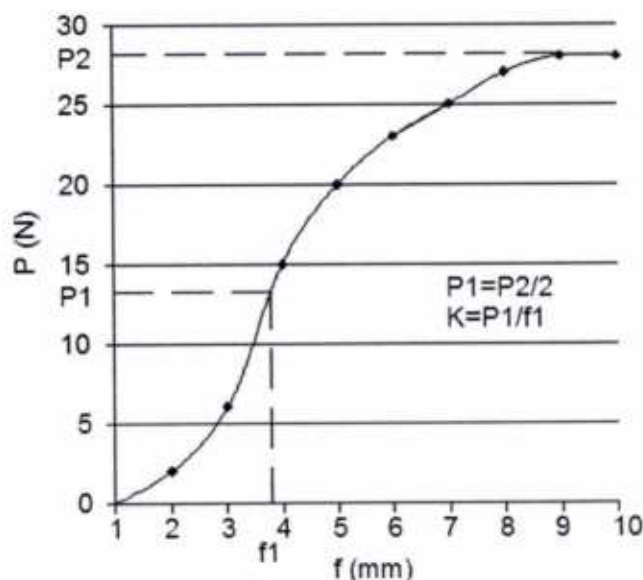
1. Determination of bonding strength radial bending strength test

The bonding properly is the property of proper bonding of various strands of CTC after curing.

In order to establish the proper bonding the test method as per CI 4.0 shall be followed. From the tests a curve of "P" as function of "f" is obtained, where P is the force on the cable [N]
f is the deflection or flexion [mm]

The curve gives:

- The value of the maximum load P2
- The ratio K corresponding to the ratio between the half of the maximum load and the corresponding deflection: $K = P1/f1$



RADIAL BENDING STRENGTH

2. Limitations & Assumptions

- The ratio between radial dimension RD of the bare CTC and axial dimension AW of the bare CTC is:
 < 5.0 for CTC made with not bondable strands
 < 4.5 for CTC made with bondable strands

$$RD/AW = \frac{((n+1)/2)(t+e+Ie)}{2(b+e+Ie)}$$

where, $e+Ie$ = double-sided thickness of enamel and epoxy if any

- The radial strand dimension $t \leq 3.2$ mm
- The axial strand dimension $b \leq 12.5$ mm

3. Calculation & Tables

The value of $P2 = \epsilon \times b \times n^2 \times t^2 \times 9.81/d$ (N)

Where:

ϵ = coefficient taking into account the number of strands of the CTC as per Table-1

d = distance between the supports

= 150 mm for CTC up to 31 strands

= 300 mm for CTC with more than 31 strands

The average value of K shall be greater or equal to the value calculated as

$$K = \eta \times E \times b \times t^3 \times ((n-2)^3 + 2)/d^3 \text{ (N/mm)}$$

**PRODUCT PURCHASING SPECIFICATION
TRANSFORMER ENGINEERING DEPARTMENT
BHEL BHOPAL**

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Where,

E is the Young modulus of the copper strand & its value is:

- For $R_{p0.2\%} \leq 180$ Mpa is considered equal to 80000 N/mm^2
 - For $R_{p0.2\%} > 180$ MPa and $R_{p0.2\%} \leq 230$ MPa is considered equal to 100000 N/mm^2
 - For $R_{p0.2\%} > 230$ MPa is considered equal to $110\,000 \text{ N/mm}^2$
- η is coefficient depending on the number of strands as per Table-2

Table 1 (For ϵ)

Number of strands	$R_{p0.2\%} > 230 \text{ MPa}$	$230 \text{ MPa} \geq R_{p0.2\%} > 180 \text{ MPa}$	$R_{p0.2\%} \leq 180 \text{ MPa}$
Up to 23	7.0	5.4	4.4
25	6.6	5.1	4.2
27	6.2	4.8	4.0
29	5.8	4.3	3.7
31	5.0	3.9	3.2
33 to 41	4.6	3.5	3.0
43 to 51	4.0	3.1	2.8
53 to 61	3.6	2.9	2.4
63 to 71	3.2	2.6	2.0
Over 73	2.9	2.2	1.8

Table 2 (For η)

Number of strands	$t < 2\text{mm}$	$t \geq 2\text{mm}$
Up to 15	0.90	0.90
17 to 23	0.90	0.70
25	0.75	0.50
27	0.60	0.45
29	0.55	0.40
31	0.35	0.25
33 to 41	0.40	0.24
43 to 51	0.24	0.22
53 to 61	0.19	0.17
63 to 71	0.17	0.14
Over 73	0.14	0.12

4. Test Method

4.1 **Specimen** : 3 nos. CTC specimens as below shall be prepared for each supply.

Length = 450 mm for CTC with $n < 33$

Length = 600 mm for CTC with $n \geq 33$

4.2 **Sampling** : Each specimen shall be cut from the original drum without bending the cable. Strands shall be locked in a suitable way.

4.3 **Thermal treatment** : The specimens shall by means of a device be shaped to a diameter of 1000 mm and axially loaded with side jaws. Treatment in an oven with air circulation at a temperature of $120 \pm 5^\circ\text{C}$ for 24 hours or at $110 \pm 5^\circ\text{C}$ for 48 hours. Cooling at room temperature for at least 6 hours.

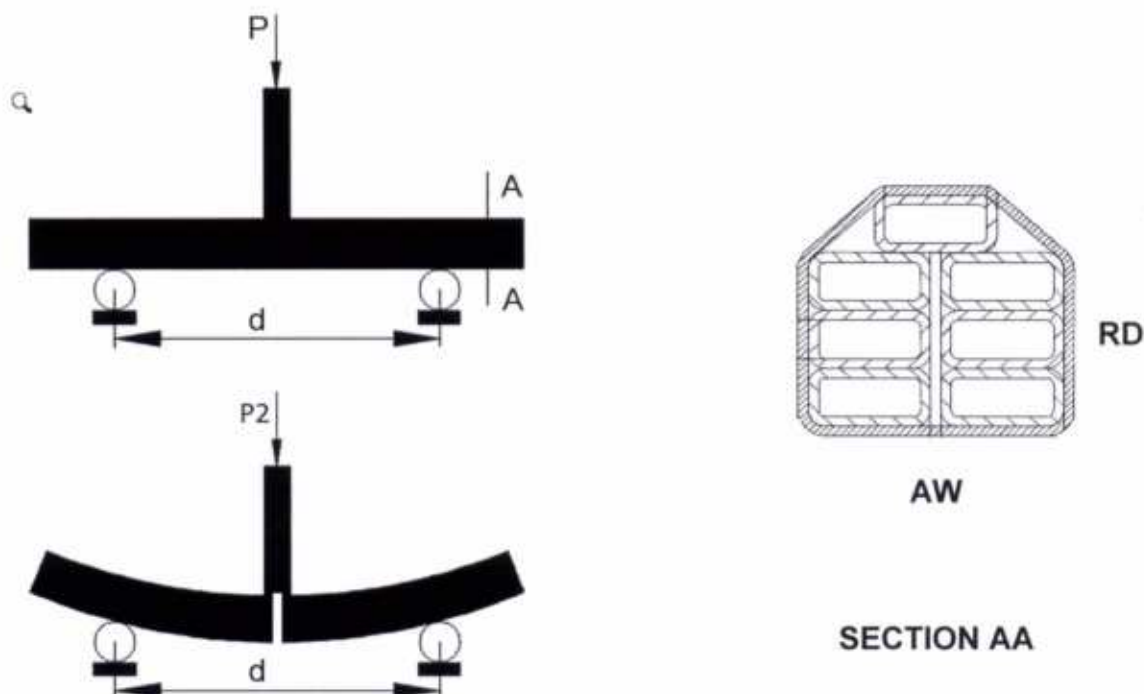
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4.4 Test Method

Each sample shall be placed over the cylindrical supports of the flexion machine-with the concave part towards the top and the convex part towards the bottom of the flexion machine.

In case of CTC with ratio $RD/AW > 3$, it is convenient to take the specimen in the correct position using suitable side-roll supports, without applying any stress.



5.0 **Results** - The parameters $P2$ & K are calculated and average value shall be greater than the values required in Cl. 3.0.

6.0 Detail of test set up:

Flexion machine is composed by a dynamometer, a support device and a plotter. Support device consists of two cylindrical supports at distance of 150 or 300 mm depending on the number of strands of the CTC.

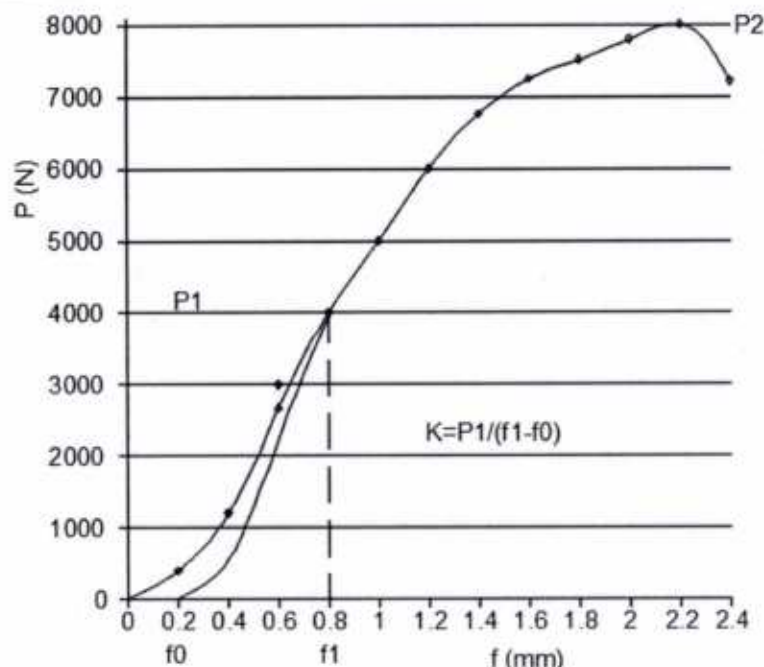
- 150 mm for CTC with $n < 33$

- 300 mm for CTC with ≥ 33

The dynamometer is used in compression with a jaw connected to a cylinder in order to apply the flexional load in the middle of the specimen. The plotter is used in order to plot the curve of load and flexion. The support device is placed at the bottom of the dynamometer and the arrow is measured with a strain gauge connected to a touch sensor to the bottom of the specimen. The touch sensor shall touch an area coincident with the width of the strand, when the spring of the touch sensor is put in tension. On the plotter the zeroing of the paper is done. The load is gradually applied to the specimen, plotting the diagram of load and arrows.

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Example : $K = P1 / (f1 - f0) = 4000 / (0.8 - 0.2) = 6660 \text{ N/mm}$

In order to keep the measurement independent of settling of paper and transpositions, the following test procedure is prescribed:

- Make a dummy test with one of the specimens. This test gives a maximum P2 value where the bonding breaks. $P1 = P2/2$ is calculated.
- On each of the other specimens the load shall be raised up to the theoretical value P1 and then decreased down to zero. Gives a remaining small flexion f0, which is the new, zero point for the flexion.

A load is then applied up to the break of the bonding properties of the specimen. This point is the P2 value for that specimen and is recognized in the diagram when the plotting mark is going towards the bottom showing a significant loss of bonding adhesion.

$P1 = P2/2$ is calculated.

- From the load/flexion curve, corresponding P1 and f1 values can be read. Calculate the ratio $K = P1 / (f1 - f0)$

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ANNEXURE-2

COVERED DIMENSIONS OF TRANSPOSED CABLES

1.	Transposing Factor (Tp)		$T_p = \pi \times ID / (n \times b)$
2.	Nominal Covered Axial Width (AW)		$AW = 2 \times (b + e + le) + P + l_{cp}$
3.	Tolerance on AW		+0.15 / -0.10
4.	Nominal Covered Radial Depth (RD)		$RD = (n+1)/2 \times (t + e + le) + P$
5.	Tolerance on RD		
	n	If $T_p \geq 7$ & $t < 2.00$ & $R_p \leq 170$ MPa	If $T_p \geq 5$ & $t \geq 2.00$ & $R_p > 170$ MPa
	≤ 21	+ 0.30 / -0.20	+ 0.50 / -0.15
	23 to 35	+ 0.40 / -0.25	+ 0.60 / -0.25
	37 to 55	+ 0.80 / -0.40	+ 1.30 / -0.40
	> 55	+ 1.10 / -0.60	+ 1.40 / -0.50
6.	Tolerance on dimension t or b		
	≤ 3.15		± 0.030
	3.16 to 6.30		± 0.050
	6.31 to 12.50		± 0.070
	12.51 to 16.00		± 0.100
7.	Overall covered dimension AW & RD shall be measured under pressure of 100 N/cm ² .		
8.	Abbreviation		
	ID = Inner diameter of winding n = No. of single strands in transposed cable b = Nominal width of bare single strand t = Nominal thickness of bare single strand e = Nominal increase due to enamel le = Nominal increase due to epoxy P = Nominal thickness of paper (both side) lcp = Inter column paper, if specified (100 μ m) Rp = 0.1% proof stress value <div style="text-align: right;"><i>(All dimension are in mm, if not specified)</i></div>		



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**PAPER COVERED CONTINUOUSLY TRANSPOSED COPPER CABLE
(0.1% PROOF STRESS)**

1. GENERAL :

This specification governs the quality requirements of paper covered continuously transposed copper conductor (CTC) incorporating a number of individual work hardened copper strips insulated with a polyvinyl – acetal based enamel of fine grade and covered over all with not less than three layers of paper and suitable for use in hot insulated oil. Paper shall conform to BHEL corporate purchase specification (CPS) No. AA 21111 or AA 21116. The material in insulating oil have temperature index of 105 .

2. APPLICATION :

Used for windings of Transformers .

3. COMPLIANCE WITH NATIONAL STANDARDS

There is no National Standard for this type of material . However assistance has been derived from the following standards .

IS : 13370 Pt. 17, 1996/ - Specification for particular type of winding wires -
IEC : 60317-17,1970 Pt. 17 - Polyvinyl Acetal enameled Rectangular .
Copper Wires. Class 105

IS : 13730 Pt.27 – 1996 / - Specification for particular Type of winding wires
IEC : 60317 - 27 – 1990 Pt. 27 - Paper covered Rectangular Copper Wire .

4. TEST SAMPLES :

4.1 Paper :

The supplier shall send the test certificate for papers for all the tests as per BHEL Corporate Purchase Specification (CPS) No. AA 21111 or AA 21116 for our approval. The test report shall be sent for each lot of paper and of different thicknesses received from the paper mill , which are to be used in the manufacture of BHEL paper covered continuously transposed copper cable .

In the absence of proper test certificate 20 sheets of size 300X300 mm of paper from each lot and of different thicknesses shall be supplied for out testing.

Revision :

CI.34 .1.19 of MOM of MRC (E)

APPROVED :

**INTER PLANT MATERIAL
RATIONALISATION COMMITTEE- MRC (E)**

Rev.No. 04

Amd.No.

Reaffirmed

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Issued

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Dt:

Year:


BHOPAL

Corp. R&D

Aug . 1987

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4.2 Finished Conductor

3 metre long sample of CTC shall be supplied for testing and inspection.

5. CONDUCTOR:

5.1 CTC of any size given in Transformer standard sheets shall be ordered. Maximum and minimum dimensions of bare cable shall be as per these individual orders. Conductor size, No. of parallels and radial paper covering shall be stated on the order.

5.2 Radial insulation shall be from 0.20 to 3.0 mm, both inclusive.

5.3 Bunched CTC consisting of 2 or more individual stacks of any size indicated in Transformer Standard sheets shall also be ordered whenever required.

6. LENGTH & WEIGHT OF CABLE:

6.1 The total weight of cable, the length of cable per drum and the total No. of drums shall be as stated on the order. Length of cable per drum specified in our order is very important and so, it shall neither be less nor more than the specified.

6.2 Weights indicated in our orders are nominal and can vary within ± 2 percent considering allowed tolerances on dimensions and on corner radius.

Excess weights more than 2 percent shall not be admissible under any circumstances.

7. TYPE OF ENAMEL COVERING:

Fine grade. However in exceptional cases when medium grade of covering is required, it shall be stated on the order.

8. CONDUCTOR:


8.1 Grade of Material:

The conductor shall be manufactured from ETP grade copper conforming to BHEL Corporate Purchasing Specification (CPS) AA 12024.

Note : Manufacture of the Copper conductors from continuous cast copper bars is preferable provided all other acceptance parameters and conditions remains same.

The conductor shall fully conform to IS : 13730 Pt. 27 - 1996 except 0.1% proof stress and resistance. The 0.1 % Proof Stress of the conductor after removal of paper when tested as per IS:1608 shall be as given below :

<u>Nominal Value</u>	<u>Tolerance</u>
115, 135 & 145 Mpa .	+15% , - 10%

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Tests shall be carried out on one sample taking 50 mm gauge length .However the conductor with any other nominal value of 0.1% proof stress can also be ordered .

8.2 ELECTRICAL RESISTIVITY:

The resistivity at 20 °C, when measured directly on the sample in “as received” condition shall not be greater than 0.01777 ohm/mm²/m. Refer Appendix “B of IS : 613 for temperature correction factor.

8.3 Enameled conductor :

The enameled conductor shall comply with fine grade of covering to IS :13730 Pt. 17, Î with the exceptions as given below :

8.4 Joints :

8.4.1 Joints in Bare Conductor :

Joints shall not be made in the conductor after it is drawn . Any joint made during the drawing process shall be resistance welded .

8.4.2 Joint in Enameled conductor : Î

If a joint in the enameled conductor becomes unavoidable due to breakage accidental stoppage of machine or when the specified length is in excess of the capacity of transposing machine bobbins, it shall be made by resistance welding , care being taken to ensure that the joint is made sound . All surplus weld shall be removed by filing and the joint finished with emery cloth / paper to give a smooth clean surface after Î which it shall be patch enameled . Any joint shall be insulated from the adjacent strips by a single piece of 100 micron thick paper half overlapped . Joints in the individual strips shall be staggered so that the distance between individual joints along the cable shall not be less than 150 mm. A red tag shall be tied at the joint portion of cable for identification and inspection . Any such joint shall be made only after prior approval of BHEL .


9. PAPER:

9.1 Grade of Paper:

Kraft paper shall conform to BHEL Corporate Purchasing specification (CPS) No. AA 21111 or AA 21116. If kraft / manila mixture or any other paper is used, it shall conform to BHEL Corporate Purchasing Specification (CPS) No. AA 21111 or AA 21116.

9.2 Thickness:

The thickness of paper shall be within limits of 50 and 140 um both inclusive.

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10. CONSTRUCTION OF TRANSPOSED CABLE:

10.1 Cleanliness of Enameled Conductor:
The enameled conductor shall be free from copper dust and other extraneous matter prior to transposing and covering with paper.

10.2 Transposition of Enameled Conductor:

The cable shall be manufactured from any odd number of enameled conductors from a minimum of 5 to a maximum of 31, according to the size of the individual conductor and the overall size of the cable as specified in the order.

The cable shall be formed by placing the strips into two stacks, the stacks, being edge to edge and the whole group of strips being continuously transposed along the length of the cable.

The pitch of successive transpositions shall be approximately 15 times the width of bare strip subject to a minimum of 50 mm. Lay i.e. the distance over which a strip resumes its original position in the conductor shall be equal to pitch multiplied by the number of strips.

For cables of radial depth 10 mm and above it shall have an intercolumn paper (paper spacer) inserted between the vertical stacks of strip. This paper shall comply with clause 9 and thickness shall be 100 um. Width of the paper spacers shall not be less than the value calculated from the following formula.

(Number of strips -1)

Width = ----- x thickness of enameled strip

2

10.3 Application of Paper Covering:

10.3.1 General:
Each layer of paper shall be continuous, firmly applied and substantially free from creases. No bonding or adhesive material shall be used except to anchor the ends of paper. Any such bonding or adhesive material shall have no deleterious effect on transformer oil, insulating paper, or electric strength of the covering. When papers of different thickness are used, the outermost paper shall be the thickest. The thickness of the paper shall be progressively increased from the innermost to the outermost layer.

10.3.2 Width of paper:
The width of paper shall be within the limits of 15 and 40 mm, both inclusive.

10.3.3 Arrangement of layers:
All the layers shall be applied in the same direction, all except the two outermost layers shall be butt wound and the two outermost layers shall be applied together with a staggering of 50% so that they are interlocked giving 50% overlap effect. Within each group the positions of the butt joints of any layer relative to the layer below shall be progressively displaced by approximately 30 percent of the paper width.



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10.3.4 PAPER THICKNESS FOR BUTT AND OVERLAP INTERLOCKED WOUND LAYERS:

Thickness of paper for butt wound layers shall be between 50 μm and 100 μm (both inclusive) Two outermost overlap interlocked layers shall be wound with paper of thickness between 75 and 125 microns (both inclusive). However, when radial insulation is 2.2 mm or more, 140 μm paper for two outermost layers is allowed to avoid two paper covering operations due to availability of a maximum of 24 paper heads in the lapping machine of same manufactures. Special extensible high density and high mechanical strength paper meeting the requirements of clause 9 can be used in the two outermost interlocked layers.

11. DIMENSIONS OF TRANPOSED CABLES :

11.1 Method of Calculating Maximum Bare Axial Width (AW) :

$$AW = 2(b + e) + F + \text{inter column paper if specified (100 } \mu\text{m thick)}$$

Where

$$AW = \text{Max. bare axial width of transposed cable.}$$

$$b = \text{Maximum axial width of bare individual conductor} \\ = \text{Nominal width} + \text{Tolerance (from table 1 below)}$$

$$e = \text{Maximum increase in dimension due to enameling} \\ (\text{as per IS : 13730 Pt. 0 /Sec. 2 : 1993 (R-2003), IEC 60317-0-2:2005}) \\ = 0.11 \text{ mm for fine grades of covering}$$

$$F = \text{Free space allowance} = 0.4 \text{ mm}$$

Table 1 - Tolerances on Nominal Dimensions - (IS :13730 Pt. 27 : 1996)

Dimension (Width or Thickness), mm		Tolerances \pm mm
Over	Up to and including	
-	3.15	0.030
3.15	6.30	0.050
6.30	12.50	0.070
12.50	16.00	0.100

11.2 Method of calculating Maximum Bare Radial Depth (RD)

$$RD = \frac{N+1}{2} (T + e) + \text{free space allowance (from Table 2)}$$

Where

$$RD = \text{Maximum bare radial depth of Transposed Cable.}$$

$$T = \text{Maximum thickness of bare individual conductor} \\ = \text{Nominal thickness} + \text{Tolerance (from table 1 in cl.11.1)}$$

$$N = \text{Number of conductors in parallel}$$

$$e = \text{Maximum increase in dimensions due to enameling} \\ (\text{as per IS : 13730 Pt. 0/Sec 2 : 1993 (R 2003), IEC 60317-0-2 : 2005}) \\ = 0.11 \text{ mm for fine grade of covering.}$$



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TABLE 2 - FREE SPACE ALLOWANCE - RADIAL DEPTH (mm)

No. of conductors	Free space allowance radial depth, mm	
	Thickness 1 -- 2 mm	Thickness 2.1 -- 3.15 mm
5 -11	0.28	0.63
13	0.30	0.70
15	0.33	0.78
17	0.36	0.85
19	0.39	0.90
21	0.42	1.00
23	0.44	1.05
25	0.50	1.15
27	0.55	1.25
29	0.60	1.40
31	0.65	1.50

11.3 Method of Calculating Maximum Axial Width & Radial Depth with Paper Covering:

Maximum covered Axial Width = $AW + t$ Maximum covered Radial Depth = $RD + t$ Where AW is taken from Clause 11.1 RD is taken from Clause 11.2 t = nominal increase in dimensions due to paper covering taken from Cl. 11.4.

11.4 Increase in Dimensions due to paper covering:


11.4.1 Increase in Dimensions:

The increase in dimensions due to covering shall have tolerance indicated below:

Increase due to covering (mm)		Tolerance %
Over	Up to & including	
-	0.5	+0 - 10
0.5	1.3	+0 - 7.5
1.3	-	+0 - 5

11.4.2 Measuring Equipment :

The measurement shall be made with a suitable ratchet micrometer . The spindle and anvil of the micrometer shall have a diameter of 5 to 8 mm .

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11.4.3 Measuring Method:
Covered Dimension shall be measured at three positions not less than 100 mm apart.. The measurements shall be made on completely straight parts of the transposed cable. The measurement shall include at least one over lap. The covering shall be removed by any method which does not damage the conductor for three positions used for the measurement of "Covered Dimensions" and "Bare Dimensions" measured at these positions. The average of the three results shall be reported as "bare dimension". The difference between "Covered Dimension" and the "Bare Dimension" shall be reported as the increase in dimension due to covering.

11.4.4 Counter Check:
The increase in dimension due to covering shall also be counter checked by adding up the thickness of paper used in each layer. The thickness of paper shall be measured by dead weight micrometer conforming to IS: 1060 (Part 1) by stacking the tapes of paper one above the other. Paper tape shall not be folded to form two or more tapes. Length of paper tapes shall not be less than 150 mm. Five measurements shall be made distributed over the stack. The paper thickness shall be computed by dividing by five the mean of five readings.

Radial insulation so computed in 11.4.4 shall not be less than the minimum allowed (considering the appropriate tolerance) as per 11.4.1.

12. TESTS ON FINISHED CABLES:

12.1 Insulation Faults Between Strips :

The insulation test at 250 V, AC for 1 minute shall be conducted on all drums between each and every other strip in CTC stack. There shall be no fault in the insulation. In case of bunched (twin) CTC, this test shall also be conducted between two stack.

13. TEST CERTIFICATE:

Unless otherwise stated three copies of the test certificate shall be supplied along with each consignment,

In additional the supplier shall ensure to enclose one copy of test certificate along with their dispatch documents to ensure quick clearance of the material.

The test certificate shall bear the following information

AA 28129 : Paper covered continuously Transposed Copper Cable. (0.1% Proof Stress) (Rev. 04) Covered & Bare Dimension of cable, No. and size of individual conductor, increase in dimensions due to paper covering, number of paper layers and thickness of paper in each layer, grade of enamel and length of cable shall be indicated in the test certificate.

BHEL Order No.
Manufacturer's / Supplier's name
Trade mark, if any
Batch No./Lot No
Test results of enameled and covered transposed cable as per Cl. 5, 8 to 12.



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Test certificates for compliance of characteristics of paper to BHEL Corporate Purchasing Specifications (CPS) No. AA 21111 and AA 21116.

14. PACKING AND MARKING:

The transposed cable shall be tightly and evenly wound, without twist, on drums in such a direction that when unrolled the exposed edge of the overlap of the outer layer of paper is towards the drum. The size of drum shall be selected from Annexure I. Drum flanges shall have an arrow mark showing the position of finishing end of cable.

Barrel dia 'C' of drum shall be at least 50 times of covered radial depth of cable subject to a maximum of 900 mm (Barrel 14) When specified on order, drums of barrel dia 1070 & 1140 mm shall be used. Out side flange dia A of drums can be reduced by the supplier considering the packing weight of CTC and capacity of the drum. However, it shall be ensured that cable is not packed up to the rim of the drum.

Before winding the insulated strip, a layer of polythene sheet or similar waterproof material shall be wrapped on empty drum. After winding the cable, the sheet edges shall be folded over the cable and then a polythene strip shall be wound on outside.

As a final protection, a layer of oiled canvas or similar waterproof material shall be wrapped over the polythene sheet, ensuring that no part of the cable is exposed.

Drums used for packing shall be made from seasoned wood. Circular disc separator shall be made from plywood.

Metal/Non –Metal straps used over, the drum shall be stamped/sealed with the manufacturer's identification marks. Similarly, end of the conductor shall also be stamped/sealed.

Each drum shall be labeled clearly stating the following information. The label shall preferably be cemented into a recess in the side of the flange of the drum.

AA 28129 - Paper Covered continuously Transposed Copper Cable. (0.1% Proof Stress)

BHEL Order No.

Manufacturer's Name / Suppliers Name

Maximum covered and bare dimension of cable, No. and size of individual conductor, increase in dimensions due to paper covering, No. of paper layers and thickness of paper in each layer, grade of enamel and length of cable.

Batch No./Lot No..

Net weight / Gross weight.

15. REFERRED STANDARDS (Latest Publication Including Amendments) :

↑

- | | | | |
|-------------------|-----------------|-------------------|----------------|
| 1. AA 21111 | 2. AA 21116 | 3. AA 12024 | 4. IS:13730-17 |
| 5. IS:613 | 6. IEC 60317-17 | 8. IEC : 60317-27 | 9. IS:1060 |
| 10 IS:13730 Pt.27 | 11 IS:1608 | | |



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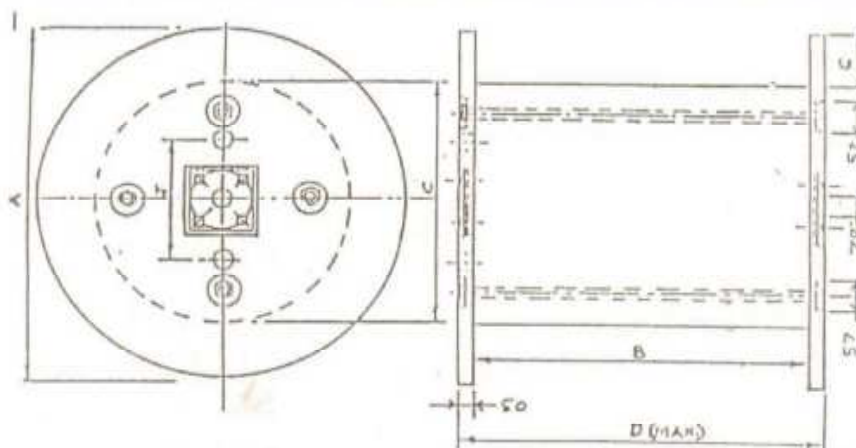
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ANNEXURE - IDimensions of Standard Drum

DIMENSION		Drum Designation						
		8	9	10	14A	14B	14C	14D
Outside Flange diameter	A	800	900	1000	1400	1400	1400	1400
Barrel dia	C	600	600	700	900	900	900	900
Overall width	D	440	440	660	440	710	910	580
Traverse	B	340	340	560	340	610	810	480
PCD of Driving Holes	J	300	300	600	600	600	600	600
Flange depth	G	88	138	138	238	238	238	238
Approximate Capacity in Kg.		300	480	890	1230	2200	2900	1730



- NOTE: 1. Partitions to hold multiple length in a drum shall be of 12.5 mm thick.
2. Any fixing bolt used within a circle of 600 mm diameter shall not project outside flange surface.

Note:

1. Partitions to hold multiple length in a drum shall be of 12.5 mm thick.
2. Any fixing bolt used within a circle of 600 mm diameter shall not project outside flange surface.



CORPORATE PURCHASING SPECIFICATION

AA 211 11

Rev. No. 06

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KRAFT INSULATING PAPER - HIGH AIR PERMEABILITY**1.0 GENERAL:**

This specification governs the quality requirements of kraft Insulating Paper for electrical purposes made entirely from soft-wood pulp manufactured by the sulphate process. The paper shall be manufactured in natural colour (undyed) and shall be free from metallic particles. The material in insulating oil shall have a temperature index of at least 105.

2.0 APPLICATION:

Used in the manufacturing of the following materials:

AA 21113: Medium phenolic coated soft kraft paper

AA 21114: Thick phenolic coated soft kraft paper

AA 28125: Paper covered rectangular copper conductor

AA 28128: Paper covered rectangular copper conductor-0.1% proof stress.

AA 28501: Paper covered stranded copper conductor

AA 28161: Paper covered round copper conductor

3.0 COMPLIANCE WITH NATIONAL STANDARDS:

The material shall comply, in general, with the requirements of the following National standards and also meet the requirements of this specification.

IS: 9335 (Part 3/Sec.5)-1985 | Cellulosic paper for electrical purposes. Part3: Spec.
Gr.: 5B2-2H1 | for individual materials. Sec.5: Special papers.

IEC 60554-3-5 - 1984 | Cellulosic paper for electrical purposes. Part3: Spec.
Gr.: 5B2-2H1 | for individual materials. Sec.5: Special papers.

4.0 DIMENSIONS AND TOLERANCES:**4.1 Sizes:**

Thickness and width shall be as stated on BHEL order.

4.2 Thickness And Tolerances:

Nominal Thickness and Tolerances shall be in accordance with IEC 60554-3-5 as shown below:

Revisions :

Cl: e-mail dt: 19.01.2004 from BP

APPROVED :

INTERPLANT MATERIAL
RATIONALISATION COMMITTEE-MRC (E)

Rev. No. 06

Amd.No.

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Year :

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Corp. R&D

JUNE, 1982

AA 211 11

Rev. No. 06

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CORPORATE PURCHASING SPECIFICATION

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Nominal Thickness, micron		Tolerance, ±%
Over	Upto & Incl.	
-	75	10
75	105	7
105	125	6
125	-	4

4.3 Width:

250, 450, 500, 610, 1015, 1145, 1320, 1400, 1780, 2030, 2285 and 2540mm with a tolerance of ± 5 mm. However any other width can also be ordered.

5.0 FINISH:

The paper shall have smooth but unglazed surface.

6.0 TEST METHODS:

Unless other wise specified, the tests shall be conducted in accordance with the relevant methods of IEC 60554-2/IS:9335 Part 2.

7.0 SAMPLE FOR TEST:

20 sheets of size 300 X 300 mm of ordered thickness suitably packed shall be supplied for testing and approval purposes. Machine direction shall be marked clearly on all the sheets.

8.0 PHYSICAL PROPERTIES:

8.1 Substance (grammage):

Nominal Thickness , μm	Substance ,g/m ²	Tolerance, ± %
25	20	10
45	36	10
50	40	10
55	44	10
63	50	5
65	52	5
75	60	5
100	80	5
125	100	5
140	112	5

Note:

Substance for intermediate thickness shall be 0.8 times of the thickness, in micron.

8.2 Apparent Density

:

0.80 ± 0.05 g/cm³

8.3 Moisture Content

:

8%, max.

CORPORATE PURCHASING SPECIFICATION

AA 211 11

Rev. No. 06

PAGE 3 OF 4

8.4 Water absorption (Machine Direction Cross Machine Direction):

Upto and including 40 micron thick	- 4 mm, min.
Above 40 micron to 55 micron thick	- 6 mm, min.
Above 55 micron to 75 micron thick	- 8 mm, min
Above 75 micron thick	- 10 mm, min

8.5 Air permeability : 0.5 to 1.0 $\mu\text{m}/\text{Pa.S}$

9.0 MECHANICAL PROPERTIES:

9.1 Tensile Strength (Expressed as tensile index):

Machine Direction (MD)	:	93 Nm/g, min.
Cross Direction (XD)	:	34 Nm/g, min.

9.2 Heat Stability (Type Test):

Paper shall be heated in air at $120^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 168 hours and following requirements shall be met.

- Increase in Conductivity of aqueous extract shall not be more than 23 ms/m.

9.3 Tear Index:

The material when tested shall show a minimum Internal Tearing Resistance as shown below, expressed as Tear Index.


Weight, g/m^2		Machine Direction, $\text{m N m}^2 / \text{g}, \text{min}$	Cross Direction, $\text{m N m}^2, \text{min}$
Above	Upto & Incd.		
30	80	5.0	6.0
80	120	6.0	7.0
120	-	8.0	9.0

10.0 ELECTRICAL PROPERTIES:

Electric strength in air:

Thickness, micron		BDV, (kV/mm), min.
Above	Upto & Incd.	
-	90	7
90	120	6.5
120	-	6

Electric Strength shall be determined at room temperature after drying the paper for 1 to 2 hours at $105^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and then tested within 2 minutes of removal from the oven.

AA 211 11	CORPORATE PURCHASING SPECIFICATION	
Rev. No. 06		
PAGE 4 OF 4		

11.0 CHEMICAL PROPERTIES:

Ash Content : 1%, max.

Conductivity of 5% aqueous extract : 10 mS/m, max.

pH of 5% aqueous extract : 6 to 8

12.0 TEST CERTIFICATES:

Unless otherwise specified, three copies of test certificates shall be supplied alongwith each consignment .

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

AA 21111 (Rev.No 06): Kraft Insulating Paper - High Air Permeability.

BHEL order No.

Manufacturer's/Supplier's Name.

Batch/Lot No.

Thickness and Width.

Net weight/No. of rolls.

Test values obtained and certificate for Physical, Mechanical, Electrical and Chemical Properties called for in this specification.

13.0 PACKING AND MARKING:

The paper shall be supplied in rolls tightly wound on suitable single piece hollow formers of 70, 75 or 90 mm inside diameter. The rolls shall be adequately wrapped to prevent damage during transport, handling and storage. The ends of the rolls shall be protected during packing to avoid any radial or telescopic deformation.

Each roll shall be clearly and indelibly marked with the following information:

AA 21111: Kraft insulating Paper-High Air permeability.

BHEL order No.

Manufacturer's / Supplier's Name


Batch/Lot No.

Thickness, Width and outside diameter.

Net weight.

14.0 REFERRED STANDARDS (Latest Publications Including Amendments) :

1) IS:9335, Part 2 & 3	2) IEC 60554-3-5 and IEC 60554-2	3) AA 21113
4) AA 21114	5) AA 28125	6) AA 28128
8) AA 28161		7) AA 28501

	CORPORATE PURCHASING SPECIFICATION		AA 28144		
			REV NO. 03		
			PAGE 1 OF 6		
<u>POLYESTERIMIDE ENAMELLED RECTANGULAR COPPER CONDUCTORS</u> <u>(TEMPERATURE INDEX 155)</u>					
<p>1. <u>GENERAL:</u></p> <p style="padding-left: 40px;">This specification governs the quality requirements of rectangular copper conductors, insulated with flexible enamel based on polyesterimide base fine and medium covering with a temperature index of at least 155.</p>					
<p>2. <u>APPLICATION:</u></p> <p style="padding-left: 40px;">Used in the windings of Rotating Electrical Machines. ↑</p>					
<p>3. <u>COMPLIANCE WITH NATIONAL STANDARDS:</u></p> <p style="padding-left: 40px;">This specification conforms to the following Standards and shall also meet the alternate / additional requirements of this specification. ↑</p> <p style="padding-left: 40px;">IS:13730 Pt 16 1996 : Specification for particular types of winding wire- Polyester enameled rectangular copper wires clause 155. ↑</p> <p style="padding-left: 40px;">IEC : 60317- 0-2 : Specification for particular types of winding wire Pt. 0 - General Requirements - Section 2 Enamelled Rectangular Copper Wire. ↑</p>					
<p>4. <u>SIZES :</u></p> <p style="padding-left: 40px;">The conductor shall be supplied to the sizes specified in our order. The sizes shall be preferably selected from Cl. 4 of IS : 13730 Pt . 16 ↑</p>					
<p>5. <u>JOINTS :</u></p> <p style="padding-left: 40px;">No joint shall be made in the copper conductor after it is drawn. Any joint made during the drawing process shall be resistance welded only.</p>					
Revision : Cl.34.1.19 of MOM of MRC- E			APPROVED : INTER PLANT MATERIAL RATIONALISATION COMMITTEE- MRC (E)		
Rev.No. 03 Dt: 23.05.2007	Amd.No. Dt:	Reaffirmed Year:	Prepared BHOPAL	Issued Corp. R&D	Dt.of Ist Issue Dec.1977



CORPORATE PURCHASING SPECIFICATION

AA 28144

REV NO. 03

PAGE 2 OF 6

6. CONDUCTOR :6.1 Conductor Material :

The conductor shall be manufactured from ETP grade copper , conforming to IS : 191 Part 5 , and shall be of high conductivity, annealed copper .

6.2 TOLERANCES ON NOMINAL DIMENSIONS :

Width of Conductor mm			Tolerance on thickness ± mm			
Over	Up to & incl.	Tol.(±)	Up to 1	Over 1 & Incl. 3	Over 3 & Upto 6	Over 6 & up to 10
-	3	0.03	0.02	0.03	-	-
3	6	0.04	0.02	0.03	0.04	-
6	10	0.07	0.02	0.03	0.04	0.07
10	18	0.10	0.02	0.03	0.04	0.07
18	25	0.10	0.03	0.04	0.06	0.08

6.3 Radius on Corners :

The conductor shall have radius corners, the radius of curvature together with the Tolerances being as given below. The arc shall merge smoothly in to the flat and the conductor shall be free from sharp, rough and projected edges.

Thickness of strip, mm		Nominal Radius on edges in mm	Tolerances (± mm)
Over	up to & incl.		
-	1.2	0.4	0.06
1.2	1.7	0.5	0.08
1.7	2.5	0.6	0.09
2.5	4.0	0.8	0.12
4.0	10.0	1.0	0.15

6.4 Tensile Strength & Elongation :

A sample of conductor 250 mm long between the grips shall be steadily elongated at a rate of 60 to 300 mm/minute until the conductor fractures. The tensile strength and elongation at fracture shall comply with the following requirements :

Nom. Conductor Thickness in mm		Tensile Strength Max. N / m ²	Elongation at 200 mm G.L. % Min.
Over	Up to & incl.		
0.8	2.5	265	30
2.5	10.0	255	35



CORPORATE PURCHASING SPECIFICATION

AA 28144

REV NO. 03

PAGE 3 OF 6

6.5 Hardness :

Hardness on finished conductor shall not exceed 60 HV.

6.6 Resistance :

The resistance at 20 ° C of a conductor of one meter length and of uniform cross sectional area of 1 mm² shall be taken as 0.01737 ohm max.

7.0 Increase In Dimensions Due To Covering :

The increase in dimensions due to the enamel covering, shall conform to the values given below :

Grade	Increase in Dimension, mm	
	Minimum	Maximum
Fine	0.06	0.11
Medium	0.11	0.16

8.0 ENAMEL COVERING:**8.1 General :**


The conductor shall be completely and uniformly covered with a durable, flexible synthetic enamel polyesterimide base . The enameled conductor shall have a smooth surface, free from embedded particles of dust and other deleterious materials.

8.2 Flexibility And Adherence:

Separate samples of conductors above 2 mm thickness shall be bent, one on edge and one on flat, through 180° round a mandrel of diameter 4 times the bare width of the conductor when bent on edge or four times the bare thickness when bent on flat.

Conductors of upto and including 2 mm thickness shall be pre-elongated by 10 percent and bent through 180° round a mandrel of diameter 9 times the thickness as per the standard procedure.

After bending the samples shall show no cracks and peeling off when examined under a magnification of approximately 10-15 times .

	<p align="center">CORPORATE PURCHASING SPECIFICATION</p>	AA 28144
		REV NO. 03
		PAGE 4 OF 6

8.3 Prolonged Heat Shock Test :

Samples of conductor above 2 mm thickness shall be bent, on flat, through 180 ° round a mandrel of diameter 4 times the bare thickness of the conductor.

Conductors upto and including 2 mm thickness shall be pre-elongated by 10% and bent through 180 ° round a mandrel of diameter 9 times the thickness in accordance with the standard procedure.

The samples prepared as above shall be placed in an electrically heated forced air circulation oven at a temperature of $180 \pm 2^{\circ} \text{C}$ for 48 hours. After removal from the oven, the samples shall be allowed to cool to room temperature and shall show no cracks when examined under a magnification of approximately 10-15 times.

8.4 Thermal Endurance Test :

The manufacturer shall certify that the enameled wire has been made using materials and process that have been shown to give a product which will meet the following requirement.

When tested by the method given in IS : 13778 Pt. 6 / IEC -851 Pt. 6 , temperature $\hat{}$ corresponding to an extrapolated life 20,000 hours shall be not less than 155°C .

8.5 Hardness of Enamel :

When tested under a thrust of 500 gf the hardness of the pencil which just fails to scrape off the enamel to the bare conductor shall be 5 H minimum.

8.6 Resistance of Enamel to Varnish Solvent :

Six samples of enameled conductors immersed in the solvents xylene butanol (approx. 9 : 1) solvent naphtha, toluene, White spirit, methylated spirit (when specially demanded) butanol, butyl acetal for 24 hours at 10° to 40°C and allowed to dry for 30 minutes after removal. The hardness of enameled conductor so obtained shall not be reduced when compared to that specified in clause 8.5.

8.7 Resistance of Enamel to Insulating Oil :

The enameled conductor bent on flat as described in clause 8.2 & then immersed in oil conforming to IS:335 for 6 hours at $110 \pm 2^{\circ} \text{C}$ and allowed to cool to room temperature. The hardness of enameled conductor so obtained shall not be reduced when compared to that specified in clause 8.5.



CORPORATE PURCHASING SPECIFICATION

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8.8 Cure Test :

A sample of the enameled wire shall be conditioned by baking at $130 \pm 2^{\circ}\text{C}$. for 10 minutes and allowed to cool to room temperature. Not less than 100 mm of the sample shall then be immersed, without bending for 5 minutes in a boiling mixture 30% commercial grade toluene and 70% denatured ethyl alcohol by volume. On removal from the liquid the enamel film shall show no visible swelling or blistering except on the last 10 mm of the immersed end.

8.9 Electric Strength :

When tested at $155 \pm 2^{\circ}\text{C}$ by the method specified in IS:13730 Pt. 16 the enameled conductor shall not breakdown at a voltage less than specified below :

Grade of covering	Breakdown Voltage Min
Fine	750
Medium	1500

9.0 TEST CERTIFICATES:

Unless otherwise stated, three copies of test certificates shall be supplied along with each consignment . In addition, the supplier shall ensure to enclose one copy of test certificate along with their dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following

AA 28144 : Polyesterimide Enamelled Rectangular Copper Conductors
(Rev.No 03) : Conductors. (Temp. Index 155)

BHEL Order No.

Manufacturer's/Supplier's Name.

Batch / Lot No.

Sizes and Quantity Supplied.

Test results / certificate of compliance with clause 6 to 8

Note: On first consignment for establishment of material, the supplier shall indicate the type and make of enamel used for the conductors, with their life time characteristics, for BHEL's approval. The approved enamel as identified by IR spectroscopy or any other suitable instrumental method shall only be used. On subsequent orders, supplier shall furnish a certificate that only the approved enamel have been used.



CORPORATE PURCHASING SPECIFICATION

AA 28144

REV NO. 03

PAGE 6 OF 6

10. PACKING AND MARKING:

The covered conductor shall be wound on Drum No. 4520 (Dia. Of flange to IS:2069 = 450 MM and approximate capacity = 55 Kgs.) . In all the cases, the covered strip shall be protected against possible damages from the inner faces of the flanges of the drums by lining each flange with stout paper or card.

Each drum shall be marked with the following :
AA 28144 : Polyesterimide Enamelled rectangular Copper conductors
(Temp. Index 155).

BHEL Order No.
Suppliers Name
Size of the Conductor
Quantity

11. Referred Standards (Latest Publications Ind. Amdts)

↑

- | | | |
|---------------------|------------------|-------------|
| 1. IS : 13730 Pt.16 | 2. IEC 60317-0-2 | 3. IS : 191 |
| 4. IS : 13778 Pt. 6 | 5. IEC 851 Pt. 6 | 6. IS:335 |
| 7. IS : 2069 | | |



CORPORATE PURCHASING SPECIFICATION

AA 229 01

Rev. No. 05

PAGE 1 OF 3

POLYAMIDE (ARAMID) CALENDER PAPER

1.0 GENERAL:

This specification governs with the quality requirements calender polyamide (Aramid) paper made from specially formulated polyamide fibres with a high degree of thermal stability. The material is used upto a maximum operating temperature of 220°C.

2.0 APPLICATION:

Used as inter-turn insulation, slot liner of electrical machines.

3.0 COMPLIANCE WITH NATIONAL STANDARDS:

There is no national standard covering this type of material.

4.0 DIMENSIONS AND TOLERANCES:

4.1 Sizes:

Thickness, width and length of the sheet / tape shall be as specified in BHEL order.

4.1.1 Preferred thickness and Tolerances:

0.05, 0.08, 0.13, 0.18, 0.2, 0.25, 0.3, 0.4, 0.5 and 0.8 mm with tolerances as per Annexure I.

4.1.2 Preferred Width and Tolerances:

Sheet: 600mm and 900mm with tolerance of ± 15 mm.

Tape: 20, 25 and 30 mm with tolerance of ± 0.5 mm.

5.0 FINISH:

The material shall be free from surface or edge defects, inclusions, voids, pin-holes and cracks which may affect its suitability for use. Visual properties shall be consistent from lot to lot.

6.0 TEST SAMPLES:

A roll of at least 50 metres length for tape or 2 m² sample from inner portion of sheet roll of ordered thickness from the same batch shall be supplied for testing and approval.

7.0 PROPERTIES:

When tested in accordance with the relevant clauses of the test methods mentioned against each, the test samples shall show the following values.

Revisions : As per 38th MOM of MRC-E

APPROVED :
INTERPLANT MATERIAL
RATIONALISATION COMMITTEE-MRC (E)

Rev. No. 05

Amd.No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt.:20.04.2012


Dt :

Year :

BHOPAL

Corp. R&D

AUGUST, 1983

AA 229 01	CORPORATE PURCHASING SPECIFICATION	
Rev. No. 05		
PAGE 2 OF 3		

7.1 Physical properties:

7.1.1 Moisture absorption: 8%, maximum

A sample of 75 ± 1 mm x 75 ± 1mm is kept at 90% RH and room temperature (27⁰ ± 2⁰C) for 72 hours.

8.0 TYPE TESTS:

8.1 Mechanical properties :

Breaking strength : As per Annexure I

Elongation at break : As per Annexure I

8.2 Electrical Properties:

Electrical strength (BDV) in air at 27 ± 2⁰ C : As per Annexure I

Volume Resistivity (ASTM D –257) : 1 x 10¹⁶ ohm-cm, minimum.

9.0 ACCEPTANCE CRITERIA:

Material shall be accepted on the basis of the following:

a) Compliance certificate furnished by the supplier

b) Test certificate furnished by the supplier and / or testing carried out at BHEL end.

10.0 TEST CERTIFICATES:

Unless otherwise stated, three copies of test certificates shall be supplied along with each consignment giving following information:

In addition, the supplier shall ensure to send one copy of test certificate along with the dispatch documents to facilitate quick clearance of the materials.

AA 229 01, Rev 05: Polyamide (Aramid) calender paper.

BHEL order No.

Manufacturers/suppliers Name:

Trade name/mark, if any:

Batch/Lot No.

Quantity supplied

Test results of clauses 4.0, 7.0 and 8.0

11.0 PACKING AND MARKING:

Rolls shall be suitably packed to prevent damage during transit and storage.

Each consignment shall be legibly marked or labeled with the following information:

AA 229 01: Polyamide (Aramid) calender paper

BHEL order No.

Manufacturers/suppliers Name:

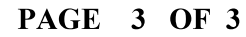
Batch/Lot No.

Trade mark, if any

Sizes and Quantity supplied

12.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1) ASTM D 257



Nominal Thickness, mm	Tolerance ± mm	Substance g/m ² Tolerance of ±10%	Breaking strength , N/cm width, minimum		Elongation, percent, minimum		Tear strength, N, minimum		Dissipation factor, maximum	Electric strength (BDV) in air at 27±2°C kV/mm, min.
			Machine direction (MD)	Cross machine direction (XD)	Machine direction (MD)	Cross machine direction (XD)	Machine direction (MD)	Cross machine direction (XD)		
0.05	0.01	40	44	19	11	8	0.7	1.6	0.004	19
0.08	0.01	63	70	35	11	9	1.2	2.3	0.005	24
0.13	0.02	120	140	68	16	13	2.4	5.1	0.006	27
0.18 0.2	0.02	170	230	120	19	15	3.6	7.1	0.006	35
0.25	0.03	250	320	160	20	16	5.2	9.8	0.006	33
0.3	0.03	310	390	210	23	19	6.5	12	0.007	34
0.4	0.05	410	490	260	21	17	8.1	15	0.007	33
0.5	0.06	540	670	390	22	17	12	19	0.007	33
0.8	0.10	850	910	610	20	16	--	--	0.007	28

ANNEXURE TO PINO:- 625669/CTC
REV:- 00

DATE:- October 26, 2019
ES NO:- 625669

COPPER DATA FOR CONTINUOUSLY TRANSPOSED COPPER CONDUCTOR (CTC)

FOR 01 NO. 6531/7775 KVA 3-PHASE DRIVE FREIGHT LOCO TRANSFORMER

FOR INDIAN RAILWAYS (FOR SOD COILS ONLY).

Sl. No.	Bare Copper Size (mm)	Rad. Nomex Insulation (mm)	Enamel Grade	Max/ Min Covered size (mm)		No. Of Reels	Length per Reel (Mtr.)	Weight (KG)		Weight Per Reel (Kg)
								Bare	Covered	
1.	19//1.8 X 3.6	0.30	M	20.89/ 19.36	8.72/ 7.98	1	130	134	138	138

NOTE TO SUPPLIERS:

1. Conductor must confirm to CPS-AA28129/ Rev-04 and nominal value of 0.1% Proof stress shall be 135 Mpa with $\pm 10\%$ tolerance. The insulation shall be enamel covering to CPS-AA28144/ Rev-03 and Aramid (Nomex) paper to CPS-AA22901/ Rev-05 in place of Kraft paper.
2. Source Test certificate of Nomex paper to be supplied along with the supply.
3. Length of reel is very important and in no case it should be less than the specified.
4. Length of conductor and weight must be marked clearly on each drum.

Prepared by:

(नीरज वार्ष्णेय)
(NEERA VARSHNEY)
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Checked by:

(रमन रामान)
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Addl. General Manager (TRE)
बी.एस.ई.एल. कोसी
B.H.E.L. JHANSI

ENFRT-LOCO\3-Phase\COPPER DATA\CTC-COPPER-DATA_SOD.docx

2208802024747PMM


 ANNEXURE TO PI NO.: _____
 REV:- 01

 DATE:-22.07.2023
 ES NO.: 626816

COPPER DATA FOR CONTINUOUSLY TRANSPOSED COPPER CONDUCTOR (CTC)
FOR 7775 KVA 3-PHASE DRIVE FREIGHT LOCO TRANSFORMER
FOR INDIAN RAILWAYS (FOR TR, FL, BUR, HL1, HL2 COILS ONLY).

Sl. No.	Bare Copper Size (mm)	Rad. Nomex Insul. (mm)	Enamel Grade	Max/ Min Covered size (mm)		No. Of Reels	Length per Reel (Mtr.)	Weight (KG)		Weight Per Reel (Kg)	Remark
								Bare	Covered		
1	21//1.7 X 3.4	0.30	M	21.81/20.14	8.32/7.58	4	234	947	980	245	For TR1-4 [01 SET]
2	25//1.7 X 3.4	0.30	M	25.67/23.70	8.32/7.58	2	56	135	140	70	For FL [01 SET]
3	17//1.8 X 4.0	0.30	M	14.83/13.72	9.52/8.78	1	186	147	151	151	For BUR [02 SETS]
4	25//1.55 X 3.35	0.25	M	23.62/21.64	8.12/7.37	2	91	202	216	108	For HL1-2 [01 SET]

NOTE TO SUPPLIERS:

- Conductor must confirm to CPS-AA28129/ Rev-04 and nominal value of 0.1% Proof stress shall be 135 Mpa with $\pm 10\%$ tolerance. The insulation shall be enamel covering to CPS-AA28144/ Rev-03 and Aramid (Nomex) paper to CPS-AA22901/ Rev-05 in place of Kraft paper.
- Source Test certificate of Nomex paper to be supplied along with the supply.
- Length of reel is very important and in no case it should be less than the specified.
- Length of conductor and weight must be marked clearly on each drum.

Prepared by:

Checked by:

 22/7
 (NEERAJ VARSHNEY)
 D.O.E. (Design) Transformer Engineer
 Indian Railways, Jodhpur



FOR INDIAN RAILWAYS (FOR TR, FL, BUR COILS ONLY)

Sl. No.	Bare Copper Size (mm)	Rad. Nomex Insulation (mm)	Enamel Grade	Max/ Min Covered size (mm)		No. Of Reels	Length per Reel (Mtr.)	Weight (KG)		Weight Per Reel (Kg)	Remark
								Bare	Covered		
1.	21//1.7 X 3.4	0.30	M	21.81/20.14	8.32/7.58	8	295	2388	2471	308.87	For TR & FL
2.	13//1.8 X 4.0	0.30	M	14.83/13.72	9.52/8.78	1	186	147	151	151	For BUR

NOTE TO SUPPLIERS:

1. Conductor must conform to CPS-AA28129/ Rev-04 and nominal value of 0.1% Proof stress shall be 135 MPa with $\pm 10\%$ tolerance. The insulation shall be Polyesterimide enamel covering to CPS-AA28144/ Rev-03 and Aramid (Nomex) paper to CPS-AA22901/ Rev-05 in place of Kraft paper.
2. Minimum winding diameter is 330 mm.
3. Length of reel is very important and in no case it should be less than the specified.
4. Length of conductor and weight must be marked clearly on each drum.
5. Source Test certificate of Nomex paper to be supplied along with the supply.
6. Rev-01 issued to make the copper data for 02 sets.

Prepared by: Shrey

Checked by:

(नीरज वाघोय)
(NEERAJ VARSHNEY)
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Dr. D.A. (Design) Transformer Engineering



CORPORATE PURCHASING SPECIFICATION

AA 120 24

Rev. No. 07

PAGE 1 OF 5

ELECTROLYTIC TOUGH PITCH COPPER WIRE BARS / INGOTS / CONTINUOUSLY CAST WIRE RODS / EXTRUDED SECTIONS

1.0 GENERAL:

This specification governs the quality requirements of electrolytic tough pitch copper wire bars, ingots, continuously cast wire rods (cleaned), and extruded sections for electrical purposes, with oxygen content of 400 ppm. max (Controlled oxygen).

2.0 APPLICATION:

2.1 Wire bars/rods / extruded sections are used for rolling / drawing into flats, strips, wires and bars etc for electrical application.

2.2 Ingots are used for Castings.

3.0 CONDITION OF DELIVERY:

3.1 Wire Bars / Ingots : As cast.

3.2 Wire Rods – Cleaned : Continuously cast, rolled annealed.

Total thickness of the copper oxide film shall not exceed 400 Å (Angstrom)

3.3 Extruded Sections : As stated in BHEL order.

Total thickness of the copper oxide film shall not exceed 400 Å (Angstrom).

4.0 COMPLIANCE WITH STANDARDS:

The material shall comply with the requirements of the following national standard and also meet the requirements of this specification.

4.1 Wire Bars / Ingots :

ASTM B5 - 2011	}	Standard Specification for
Gr : ETP-C11000	}	Electrolytic tough Pitch Copper
Oxygen - 400 ppm, max	}	Refinery Shapes

4.2 Wire Rod-Continuously Cast:

ASTM B49 - 2010	}	Copper Redrawn Rod for Electrical
Gr: ETP – C11040	}	Purposes
Oxygen - 400 ppm, max.	}	

Revisions :

Cl: 24.1of MOM of MRC-NFCW+HE

APPROVED :

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE-MRC (NFCW+HE)

Rev. No. 07

Amd.No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt:06.06.2012


Dt :

Year :

BHOPAL

Corp. R&D

June, 1977

AA 120 24	CORPORATE PURCHASING SPECIFICATION	
Rev. No. 07		
PAGE 2 OF 5		

4.2 Extruded Sections:

Assistance has been drawn from the following:

ASTM B49 - 2010

Gr: ETP – C11040

Oxygen - 400 ppm, max.

}

}

}

Copper Redrawn Rod for Electrical
Purposes

5.0 DIMENSIONS AND TOLERANCES :

5.1 Sizes:

5.1.1 Wire Bars / Ingots:

The standard size and shape of wire bars/ingots shall be as per clause 7 of ASTM B5 and shall be as per Fig. 1 or 2 of the standard.

Any combination of the six standard sizes / shapes of wire bars/ingots as per Fig.1 or 2 of ASTM B5 is acceptable.

5.1.2 Wire Rods:

Wire rods shall be supplied in continuous length. The diameter of the bar to be supplied shall be as agreed to between BHEL and the manufacturer.

5.1.3 Extruded Sections:

Size of the extruded sections shall be as specified in BHEL order.

5.2 Tolerances:

5.2.1 Wire Bars/Ingots:

The permissible variation in dimensions and weights shall be as per ASTM B5.

5.2.2 Wire Rods:

The permissible tolerance on ;diameter shall be as per ASTM B49.

5.2.3 Extruded Sections:

As specified in BHEL order.

6.0 MANUFACTURE:

6.1 Wire Bars/Ingots :

Wire bars/Ingots shall be cast from ETP grade copper having oxygen content of 400 ppm, max.



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6.2 Wire Rods:

Wire rods shall be manufactured from continuously cast rods and annealed, from ETP grade copper having oxygen content of 400 ppm, max.

6.3 Extruded Sections:

Extruded sections shall be manufactured from ETP grade copper having oxygen content of 400 ppm, max

7.0 FREEDOM FROM DEFECTS:

7.1 Wire Bars/Ingots:

Wire bars/Ingots shall be substantially free of shrinks, holes, cold sets, pits, sloppy edges, concave tops, etc.

7.2 Wire Rods (Cleaned) & Extruded Sections:

The wire rods/Extruded sections shall have a smooth untarnished surface.

Surface shall be clean, smooth and free from pipes, laps, scale, flakes, cracks, kinks, twists, seams, damaged ends, excessive oil & grease and other injurious defects.

Total thickness of the copper oxide film shall not exceed 400 Å (Angstrom), when tested in accordance with ASTM B 49.

8.0 TEST SAMPLES:

One sample per melt shall be taken for chemical, mechanical and physical properties.

9.0 CHEMICAL COMPOSITION:

The chemical composition of copper shall be as follows:

Copper including silver – 99.90, minimum.


Oxygen content – 400 ppm, maximum.

10.0 PHYSICAL PROPERTIES:

Electrical resistivity when tested in accordance with ASTM E 1004 – Eddy Current probe Method, shall meet the following values.

10.1 Wire Bars/Rods/Extruded Sections:

The maximum mass resistivity for wire rods/bars shall be 0.15328 Ohm g/m² (conductivity 100% minimum IACS) at 20°C, annealed.

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10.2

Ingots

The maximum mass resistivity for ingots and ingot bars shall be 0.15694 Ohm g/m² (Conductivity 97.66% minimum IACS) at 20⁰C annealed.

*Note: Refer IS 613 for temperature correction factor.

11.0

MECHANICAL PROPERTIES

11.1

Elongation (Wire Rods-Continuously Cast & Extruded Sections).

When tested in accordance with IS: 1608 / ASTM B49, the elongation on 250 mm gauge length shall not be less than 30 percent.

11.2

Spiral Elongation Number (SEN) (Wire Rods – Continuously Cast):

The spiral elongation number (SEN) as per ASTM B49 shall be reported for information in the test certificate.

12.0

TEST CERTIFICATES:

Unless otherwise specified in the order five copies of test certificates shall be supplied along with each consignment, giving the following information.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with the dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

AA 12024, Rev. No.06: Electrolytic Tough Pitch Copper Wire Bars/ Ingots/Continuously Cast Wire

BHEL Order No.
Supplier's Reference and Name
Heat No. /Charge No.

Results of Chemical composition, Physical & Mechanical properties and Dimensional measurements.

The spiral elongation number (SEN) as per ASTM B 49 shall be reported for information.
Consignment/Identification, No.



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13.0 PACKING AND MARKING:

13.1 Packing:

13.1 Wire Bars / Ingots:

The wire bars/ingots shall be supplied in bundles.

13.1.2 Wire Rods (Continuously Cast) / Extruded Sections:

Wire rods / Extruded sections shall be supplied with wax coating, packed on strong wooden pellets with polyethylene and strapped with steel strips.

13.2 Marking :

Each bundle/package shall be marked with the following information :

AA 12024 : Electrolytic Tough Pitch Copper Wire Bars/ Ingots/Continuously Cast Wire Rods/Extruded Sections..

BHEL Order No

Consignment Identification No.

Size & Weight

Cast No.

Supplier's Name.

14.0 REFERRED STANDARDS (LATEST PUBLICATION INCLUDING AMENDMENTS):

1) ASTM: B5

2) ASTM: B49

3) ASTM: E 1004

4) IS: 613

5) IS: 1608

114882/2024/HEP-CMM34007


Ref: TRE/FRT/CPR REV-02

**COPPER DATA FOR CONTINUOUSLY TRANSPOSED NOMEX COVERED COPPER
CONDUCTOR (CTC) FOR TRACTION TRANSFORMERS (LOCO/EMU/MEMU/TRAIN SETS)**

Sl. No.	Bare Copper Size (mm)	Rad. Nomex Insul. (mm)	Enamel Grade	Max Covered size (mm)		No. Of Reels	Length per Reel (Mtr.)	Weight (KG)		Weight Per Reel (Kg)	Remark
								Bare	Covered		
1.	21//1.7 X 3.4	0.30	M	21.81	8.32	04	295	1194	1235.5	308.87	FOR 6531 KVA (TR & FL)
2.	13//1.8 X 4.0	0.30	M	14.83	9.52	01	95	75	77.5	77.5	FOR 6531 KVA (BUR)
3.	21//1.7 X 3.4	0.30	M	21.81	8.32	04	234	947	980	245	FOR 7775 KVA (TR)
4.	25//1.7 X 3.4	0.30	M	25.67	8.32	02	56	135	140	70	FOR 7775 KVA (FL)
5.	13//1.8 X 4.0	0.30	M	14.83	9.52	01	95	75	77.5	77.5	FOR 7775 KVA (BUR)
6.	25//1.55 X 3.35	0.25	M	23.62	8.12	02	91	202	216	108	FOR 7775 KVA (HL1 & HL2)
7.	19//1.8 X 3.6	0.30	M	20.89	8.72	01	130	134	138	138	FOR 6531/7775 KVA (SOD)
8.	21//1.7 X 5.2	0.3	Gr-II	21.26	11.82	08	127	1608	1646	205.75	FOR 9035 KVA (TR)
9.	19//1.8 X 4.0	0.3	Gr-II	20.4	9.4	01	136	157	162	162	FOR 9035 KVA (SOD)
10.	13//1.8 X 4.0	0.3	Gr-II	14.83	9.52	01	90	71	73.5	73.5	FOR 9035 KVA (BUR)
11.	25//1.7 X 3.4	0.3	Gr-II	25.67	8.32	01	103	124	128	128	FOR 9035 KVA (FL)
12.	9//1.6 X 6.8	0.15	Gr-I	14.76	9.28	04	97	331	340	85	FOR 2370 KVA (TR)
13.	11//1.6 X 6.2	0.15	Gr-I	13.52	11.02	02	101	192	196	98	FOR 2370 KVA (AUX)
14.	7 // 2.0 X 9.2	0.15	Gr-I	19.46	9.14	02	107	240	244	122	FOR 1276 /1578 KVA (TR)

NOTE TO SUPPLIERS:

- Conductor must confirm to CPS-AA28129/ Rev-04 and nominal value of 0.1% Proof stress shall be 135 Mpa with $\pm 10\%$ tolerance.
- For conductor Sl.no. - 1-13, the insulation shall be enamel covering to CPS-AA28144/ Rev-03 and Aramid (Nomex) paper to CPS-AA22901/ Rev-05 in place of Kraft paper. Winding mould diameter shall be 330 mm for IT-1-11, 209 mm for IT-12 & 539 mm for IT-13.
- For conductor Sl.no.-14, the insulation shall be dual enamel covering to IEC-60317-29 (Polyester or Polyesterimide over coated with polyamide-imide) and Nomex paper to CPS-AA22901/ Rev-03 in place of Kraft paper. Winding mould diameter shall be 199 mm.
- Source Test certificate of Nomex paper to be supplied along with the supply.
- Length of reel is very important and in no case it should be less than the specified.
- Length of conductor and weight must be marked clearly on each drum.


 11/1/24
(नीरज वार्शेय)
(NEERAJ VARSHNEY)
 डी.डी. जनरल मैनेजर (ट्रान्सफार्मर इंज.)
 डी.डी. जनरल मैनेजर (ट्रान्सफार्मर इंज.)
 डी.डी. जनरल मैनेजर (ट्रान्सफार्मर इंज.)



BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

QUALITY PLAN FOR CTC (Continuously Transposed Conductor)

QA PLAN NO: QC-TCB-QAP-BO-55 REV. 01

DATE: 27/08/2010 PAGE 1 OF 3

SL	COMPONENT / OPERATION	CHARACTERISTICS	TYPE OF CHECK	REFERENCE DOCUMENT	QUANTUM OF CHECK	INSPECTION AGENCY	REMARKS
Raw material Inspection							
1	Kraft Insulating Paper	<ul style="list-style-type: none"> Thickness Routine tests Type Test (test to be conducted for each manufacturer once in 5 Yrs.) 	M/T	BHEL spec. AA 21111 AA 21116	1 Sample per lot for each thickness	CTC Vendor, BHEL/TP/A	<ul style="list-style-type: none"> - CHP For Record Review - CTC manufacturer shall send one set of samples (20 sheets of size 300mm x 300mm) and paper Manufacturer's test certificates for approval from BHEL Bhopal before use. Complete consignment details e.g. No. of reel, weight, invoice and linking paper shall be sent. - Paper from BHEL Bhopal approved source shall only be used. - CHP For Record Review - Any discrepancy observed in CC rod at any stage of processing should be reported to BHEL with full details stating coil no, nature of defect with photographs. - CC Rod from BHEL Bhopal approved source shall only be used. - Record review by CTC vendor
2	CC Rod	<ul style="list-style-type: none"> Surface finish. Chemical composition: <ul style="list-style-type: none"> i) Copper including silver ii) Oxygen content. Mass Resistivity. Elongation 	V/T	BHEL spec. AA 12024	1 sample per lot.	CTC Vendor, BHEL/TP/A	
3	a) PVA based adhesive used for Kraft paper Bonding b) Enamel and Epoxy coat	<ul style="list-style-type: none"> i) Type grade & make. ii) Non volatile matter content, consistency, bend strength, pH Value, Compatibility with Transformer oil (Type test) Colour, appearance, Solid contents, Viscosity, Flash point, storage and shelf life of enamel. Compatibility with Transformer Oil 	T	IS 2257 CTC Vendor's spec.	1 sample per lot.	CTC Vendor	

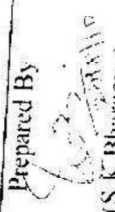
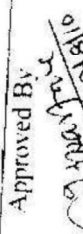
Signature
27/8/10

Signature
27/8/10

QA PLAN NO: QC/TCB/QAP/BO/55 REV 01							
SL	COMPONENT / OPERATION	CHARACTERISTICS	TYPE OF CHECK	REFERENCE DOCUMENT	QUANTUM OF CHECK	INSPECTION AGENCY	REMARKS
In process inspection							
4	Manufacturing and storage area	Proper cleaning of copper dust and normal dust in plant and machinery.	V	BHEL Spec AA 28125/ AA 28128	100%	Vendor	- Surveillance Check By BHEL/TPIA/CC
5	(a) Drawing, Flattening and annealing	- Surface finish - Corner radius - Dimension - Elongation / Proof stress	V / M / I	AA 28127 AA 28129	100% mother reels	CTC Vendor	1-Surface defects like burrs, sharp edges, blisters, flakes, cracks, grease, foreign particles, and embedded impurities are not acceptable. 2-The conductor shall have smooth, bright and polished surface. 3-The enamel coating shall be smooth and continuous, free from streaks, blisters and foreign material.
	(b) Enameling and Epoxy coating	- Surface finish of bare strip - Appearance of enameled strip - Bare and covered Dimensions - Shelf life - Tests: Resistance, Elongation, Proof stress (if applicable), springiness, flexibility and adherence, heat shock, resistance to solvents, BDV	V / M / I	AA 28127 AA 28129 IEC 317-18 TRE 036	100% 3 samples per enamel setting (start, end and in between)	CTC Vendor	Complete records to be maintained by vendor for ensuring traceability from CTC rod to Finish stage
	(c) Transposition and Paper Covering	- Visual Inspection - Dimensions of CTC stack - Pitch of Transposition - No. of layers, width and arrangement of paper lapping	V / M / I	AA 28127 AA 28129	100%	CTC Vendor, BHEL/TPIA	CHP for witness of covering for 2 reels of each size. The CTC stack shall be compact in both the directions; there shall be no damage to enamel.
Final inspection							
6	(a) Visual, Dimensions and Insulation covering	- Covered dimension of cable - Increase in dimension due to paper insulation. - Paper covering: Thickness, width, staggering and overlap - Inter column paper - Bare dimensions of cable - Pitch of transposition - Appearance of enameled conductor	V / M	AA 28127 AA 28129 IEC 317-18 TRE 036	3 samples per lot for each size	BHEL/TPIA	CHP for witness
Signature: 27/8/10							

Signature
27/8/10

Signature
27/8/10

QA PLAN NO. QC TCB QAP BO 55 REV. 01		CHARACTERISTICS		TYPE OF CHECK		REFERENCE DOCUMENT		QUANTUM OF CHECK		INSPECTION AGENCY		DATE: 27/08/2010		PAGE: 3 OF 3			
SL. COMPONENT / OPERATION														REMARKS			
		- Increase in thickness due to enameling and epoxy coating. - Corner radius perpendicularness of edges and merging - Bare thickness and width - Resistivity - Elongation - Proof stress test (if applicable) - Flexibility and adherence - Springiness - Heat shock - Resistance to solvent - BDV - Insulation test (between each and every other strip) at 250V - Epoxy curing check				AA 28127 AA 28129 IEC 317-18 TRE 036		1 sample per lot per size		BHFL TPIA		CHP for witness					
7		Packing and Dispatch		- Provision of inter-layer paper. - Sufficient gap from drum brim to packed conductor top - Marking of winding direction. - Use of proper drum size - Proper identification - Use of refrigerated container as per PO requirement		AA 28127 AA 28129 TRE 036 TR 10133		100%		CTC Vendor		Surveillance check by BHFL TPIA					
LEGENDS: V - VISUAL, M - MEASUREMENT, T - TEST, TPIA - THIRD PARTY INSPECTION AGENCY, CQ - BHFL CORPORATE QUALITY, CHP - CUSTOMER HOLD POINT (VENDOR CAN NOT PROCEED WITHOUT GETTING CLEARANCE FROM BHFL CQ TPIA)																	
Changes in the revision: - Remarks for clause 2 updated. - Clause 4 added and renumbering done.																	
Prepared By:  (S.K. Bhargava) Approved By:  (J.B. Basfore) जे. बी. बासफोर / J.B. BASFORE Addl. General Manager (Quality-T.C.B.) बी. एच. ई. एल. भोपाल / B.H.E.L., BHOPAL																	

GENERAL TERMS AND CONDITIONS OF ENQUIRY

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SN	Description
1	General:
A	These general terms & conditions shall apply to all enquiries, notice inviting tenders, request for quotations concerning the supply of goods and / or rendering of services to Bharat Heavy Electricals Ltd., Jhansi (hereinafter referred to as BHEL or the Purchaser) or its Projects / Customers.
B	Special / supplementary enquiry conditions & Mandatory Sheet requirements, if any, covered in the respective enquiry, will override the relevant conditions mentioned in this document.
C	Commercial Conditions quoted by the vendor in any place including as stated in bidder's 'General Terms and Conditions' if any, shall not be binding on the Purchaser. Only the conditions contained in this document, including special conditions, if any, for this enquiry shall prevail.
2	General Instructions - Common for Indigenous & Foreign enquiries
A	Sealed bids are invited for scope of Supply / Services as detailed in the enquiry. The quotation should be neatly typed and free from over writing/ erasures. Any correction or addition must be authenticated.. Relevant enclosures, supporting documents, catalogue, samples, if any, as required as per Notice Inviting Tender (NIT) conditions shall be sent along with technical offer. Rate should be quoted in the units asked for in the enquiry. The rates should be quoted both in figures and words. In case of discrepancy in figures and words, the rates quoted in words shall be considered.
B	<p>Bids shall be submitted in a Sealed cover with Enquiry No., Due date and Bidder's name indicated on the Cover. The Cover should contain both Part-I and Part -II bids, as the case may be.</p> <p><u>Part – I bid</u></p> <p>In case of Two part Bid, Part – I bid i.e. Technical bid containing (i) technical offer, (ii) Mandatory Sheet, (iii) un-priced copy of the Price Bid, (iv) EMD (if called in NIT), and (v) Relevant documents of PQR (if called in NIT), all duly filled-in & signed; should be kept in one envelope. The Part – I bid Cover items should have Enquiry No., Part I Bid, Due date, and Bidder's name indicated on the Cover</p> <p><u>Part –II Bid wherever Reverse Auction is not called for</u></p> <p>Part – II bid i.e. Price Bid containing only the price (as called for in the price format where required), duly filled-in & signed; should be kept in a separate envelope. The Price bid Cover items should have Enquiry No., Part II Bid, and Bidder's name indicated on the Cover</p> <p><u>Part –II Bid wherever Reverse Auction is called for</u></p> <p>Part – II bid i.e. Price Bid containing only the price (as called for in the price format where required), duly filled-in & signed; should be kept in a separate envelope. Wherever, BHEL informs that it proposes to conduct Reverse Auction for many items in the tender and where evaluation of the tender is on individual item basis, separate Part – II bids are to be submitted for each of the item. The Price bid Cover for each of the items should have Enquiry No., Part II Bid, Item no of Enquiry, and Bidder's name indicated on the Cover</p> <p>The envelopes indicating Part –I or Part-II, as the case may be, to be put in a bigger envelope, which should be addressed to In-charge, Tender Room, Bharat Heavy Electricals Ltd., Administration Building, Jhansi 284120. Enquiry No., due date and bidder's name must be mentioned on the bigger envelope. Offer must reach tender room of BHEL Jhansi latest by 13.15 hrs of the enquiry due date.</p> <p>In case, the bids are not submitted in the manner stated above, the offer of the bidder(s) are liable to be rejected.</p> <p>It is preferred that offers are sent in sealed envelope. However, if the bidder chooses to send the offer through E-mail, offers received through E-mail shall be considered only when such offers are complete in all respects.. In cases of offers through E-mail, the offers shall be sent to tenderbox.jhs@bhel.in, wherein the Subject of the Email should mention the Enquiry Number. E mail offers sent to any other E mail ID shall not be entertained. BHEL shall not take any responsibility if the offers are incomplete or if the Enquiry number is not mentioned in the subject of the E-mail.</p>
C	Wherever BHEL proposes to issue tender through e –procurement, the same philosophy as mentioned in 2B above is ensured through suitable system locks.
D	Offer received after 13.15 hrs of the due date will be termed as "Late" and shall not be considered

GENERAL TERMS AND CONDITIONS OF ENQUIRY

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	<p>BHEL reserves the right to go for Reverse Auction (RA) (as per Guidelines available on www.bhel.com) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non consideration of their bids, in case BHEL decides to go for RA. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).</p>
E	<p>The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with the offer. The envelope sealed price bid of successful L1 bidder in RA, if conducted, shall also be opened after RA and the order will be processed on lower of the two bids (RA closing price & envelope sealed price) thus obtained. The bidder having submitted this offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rates.</p> <p>If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com)</p>
F	<p>The goods offered shall conform to BHEL specifications / drawings and / or Indian / International standards as mentioned in the Enquiry and the bidder is required to confirm his unconditional acceptance to the same. Vendors, seeking deviations from the specifications and any other conditions, may indicate the same clearly on a separate sheet, with reasons for such deviations. BHEL reserves the right to reject the offer with deviations or load the deviations suitably for evaluation.</p>
G	<p>Offers shall be submitted directly by vendor or his authorized agent/representative only. Offers from any other sources shall be considered as unsolicited and shall be summarily rejected.</p>
H	<p>Bid in single part or techno-commercial bid in two part system (as the case may be) will be opened on the due date. In case of two part bid, price bids of techno-commercially acceptable bidder(s) only shall be opened on the assigned date, for which separate intimation will be sent to the acceptable bidders.</p>
I	<p>The bidder whose bid is technically not accepted will be informed & EMD wherever submitted shall be returned along with his price bid within <u>30 days</u> of contract finalization date. No interest will be payable on EMD amount. EMD shall however be forfeited in the event of bidder backing out after submission of the bid.</p>
J	<ol style="list-style-type: none"> Any discount / revised offer submitted by a bidder on its own shall be considered, provided it is received on or before the due date and time of offer submission (Part-I). Conditional discounts shall not be considered for evaluation of tenders. Unsolicited discounts / revised offers given after Part-I bid opening shall not be accepted. No change in price will be permitted within the validity period asked for in the enquiry. In case of changes in scope and / or technical specification and / or commercial terms & conditions, having price implication, techno-commercially acceptable bidders shall be asked by BHEL to submit the impact of such changes on their price bids. A suitable cut-off date and time shall be given to all the techno-commercially acceptable bidders to submit the impact on their price bids. In case a bidder opts to submit revised price bid instead of impact called for, then their original price (i.e. previous bid) shall be necessarily opened to know the price impact. .
K	<p>The bidders will submit Integrity Pact, duly signed by its authorized signatory, if called for in the enquiry.</p>
L	<p>Wherever the enquiry is issued to unregistered vendor referred by BHEL Customer, the bidder shall submit the Supplier Registration Form (SRF) online at www.bhel.com and submit the signed copy of the duly filled-in SRF along with the bid. Price bids of such vendors, will be opened only on techno-commercial acceptance of bid and if allotted permanent code before the date of price bid opening.</p>
M	<p>BHEL expects that the bidder must respond to the enquiry. Regret letter, with valid reasons for not participating in the tender will be submitted where the bidder is unable to submit offer. Repeated lack of response on the part of vendor may lead to his deletion from BHEL's approved vendor list.</p>
N	<p>Goods shall be properly packed to avoid transit damage. Suitable markings shall be provided to identify the goods with that of the PO No, Item no. and the consignee details.</p>
O	<p>Goods shall be consigned to Manager , Stores (CRX), BHEL, Jhansi - 284120, India, unless otherwise specified in the PO.</p>
P	<p>Offers of the Bidders who are under HOLD or are under Interim Suspension or are on the banned list (as on date of Price bid opening) and / or those bidders who engage services of such suspended / banned firms, shall be rejected. The list of firms banned by BHEL is available on BHEL web site www.bhel.com. The list of firms suspended by BHEL, Jhansi is available on www.bheljhs.co.in. The " Guidelines for suspension of business dealings with Suppliers / Contractors" is uploaded on BHEL website http://www.bhel.com/vender_registration/vender.php</p>

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Q	In case of press tenders (i.e. those published in newspapers) all corrigenda, addenda, amendments, time extensions, clarifications etc. to the tender will be hosted on BHEL website. (www.bhel.com & www.bhejhs.co.in) only. Bidders responding to press tender should regularly visit website(s) to keep themselves updated.
R	In case the bidder decides to sub-contract part of his activity / work to some of his vendors, details of such intended subcontracting shall be mentioned in the bid. This will however not absolve the bidder from his contractual obligations and responsibilities.
S	In the course of evaluation, if more than one bidder happen to occupy L-1 status and the order is to be placed on a single vendor, effective L-1 will be decided by soliciting discounts from the respective L1 bidders.. In case more than one bidder happen to occupy the L1 status even after soliciting discounts, the L1 bidder shall be decided by, a toss / draw of lots, in the presence of the respective L1 bidder(s). BHEL's decision in such situations shall be final and binding.
T	Wherever the minimum reserved capacity is called for in the tender, the offers of such bidders, who do not quote for the minimum reserved capacity, are liable to be rejected.
U	<p>Due to large qty. requirement, we may finalize the tendered quantities among more than one bidder (after acceptance of L1 price by the other bidders), but limited to the capacity quoted by the bidder. Indicate your committed capacity for the item(s) tendered and confirm that capacity offered by you against our tender shall be available for us during the entire period of the Purchase Order / Contract.</p> <p>Where the number of qualified responses (N) are three or more, the distribution shall be limited to (N-1) responses. The manner and proportion of distribution shall be mentioned in the specific enquiry. Normally, the quantity distribution shall be generally as per quantities allocated to the bidder, but limited to the capacity quoted by the bidder.</p> <p>While the manner of distribution is mentioned in the enquiry, the absolute values of the unit of measurement shall be rounded off. For eg : If an allocation of 40% quantity results in 23.5 units, the quantity allocated shall be 24 units. If an allocation of 40% quantity results in 23.3 units, the quantity allocated shall be 23 units</p> <p>The distribution shall be based on the acceptance given by bidders to the L1 price counter offered to them. In case any or all of the bidders do not accept the counter offer, and a situation arises wherein bidder(s) who have agreed to the counter offer may have to be allotted more quantity than what has been proposed earlier, then the same shall be done, but limited to the capacity quoted by the bidder (s).</p> <p>Wherever, the number of techno commercially qualified responses (N) is two, BHEL reserves the right on whether or not to distribute the quantity on more than one bidder</p> <p>While the above pattern shall also be followed in long term framework agreements (FA), performance of the suppliers shall be monitored periodically, and the loading in FA will also be subject to factors like (a) Customer approval of suppliers in specific projects, (b) quality surveillance at Supplier works, (c) Suppliers delivery and quality performance during execution of FA, (c) Pendency of orders on the supplier and (d) responsiveness in addressing post order completion issues at BHEL. In view of these factors, the loading during execution of FA may vary with respect to allocated quantity. During execution of FA, if the performance of supplier is not upto the mark in respect of delivery / quality performance / quoted capacity of the bidder, BHEL reserves the right to either reduce further loading or stop loading till the execution of overdue orders. In such cases, action shall be taken against the defaulting supplier(s) as per guidelines of the Company, and the balance allocated full or part quantity of the defaulting supplier(s) may be re-distributed amongst other performing and willing vendors of the FA..</p>
V	The bidder shall submit price bid strictly in the price format, wherever provided for, in the enquiry. Any attempt on the part of the bidder to alter the contents of the price bid format in any manner, which in the opinion of BHEL can vitiate the tendering process, will lead to rejection of the bid, <u>besides BHEL taking appropriate punitive action as deemed fit.</u>
3	Vendor's particulars & logistics information
	Bidder to provide contact details and all logistical information as called for in the Mandatory Sheet enclosed to this enquiry
4	Delivery Schedule & Completion date
A	<ul style="list-style-type: none"> Instead of writing specific date against delivery offered, Bidder shall commit delivery period in number of days / weeks/ months to suit the delivery period indicated in the enquiry. Commencement of delivery period shall be reckoned from the date of PO / LOI or any other agreed milestone. Seller shall deliver the goods in the manner and schedule agreed under the Purchase order. Goods shall be delivered within contractual period or any extension thereof, if any, granted by the Purchaser.

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B.	In case of foreign supplies, bidders are to quote for CIF/CFR delivery terms .For CIF / CFR delivery terms, the date of bill of lading (BL) shall be taken as actual date of delivery.
C.	In case of Indigenous bidders, the date of delivery at named destination in India shall be taken as contractual delivery completion date where delivery terms are FOR destination. In case of 'Ex-works' delivery terms, the date of LR / RR shall be the contractual delivery completion date.
D	In case of unreasonable delivery quoted by the bidders, BHEL reserves the right to reject such offers.
5	Transit Insurance
	Except where delivery terms are agreed on CIF basis for Imports & FOR destination basis for indigenous purchases, transit insurance will be covered by BHEL under its open Marine Insurance Policy. Seller shall inform dispatch particulars with value of consignment to the Purchaser within 07 days of dispatch for BHEL to arrange insurance coverage in its policy. Failure on the part of seller to inform dispatch particulars will make him liable to pay for any transit damages / losses suffered by the Purchaser.
6	Delivery Terms
A	Indigenous Purchase
	<p>Goods shall be delivered on 'FOR Destination' basis (with freight and insurance in bidder scope) to the named destination unless otherwise called for in the enquiry. In case the bidder quotes on Ex-Works, the offer of such bidder(s) is/are liable to be rejected.</p> <p>Wherever the PO terms mentions delivery terms as FOR Destination basis, and In the event of supplier having supplied the material by BHEL Truck / Vehicles as per BHEL transportation rate contract, thus causing BHEL to bear the freight charges, the corresponding amount ,incurred / estimated, shall be deducted from the bills of the Supplier.</p>
B	Foreign Purchase – Imports
	<ol style="list-style-type: none"> 1. Goods shall be dispatched by sea on CIF/CFR basis, unless stated otherwise in the enquiry or purchase order. The destination shall at Navsheva, Mumbai for LCL/Breakbulk Cargo and ICD, Mandideep, Madhya Pradesh for FCL Cargo 2. If air freight is called for in the enquiry, the goods shall be delivered on FCA basis to the named Airport 3. Please visit BHEL Jhansi web site www.bheljhs.co.infor details of named Airports. . Name of the airport so chosen by the Seller shall be indicated by the Bidder in his offer. 4. Goods shall be handled for air freight by BHEL's freight forwarder only, under FCA contracts and HAWB issued by BHEL appointed forwarder or his authorized agent(s) shall only be accepted for negotiation.
C	<ul style="list-style-type: none"> • In the event of bidder offering CFR or CIF delivery terms for delivery in FCL(Full Container Load), the Bidder shall provide 14 days' time free of detention from the date of delivery at delivery port. Wherever the detention free period offered is less than 14 days, the bids shall be loaded for the period short of 14 days period. • <u>Port congestion charges or any additional charges claimed by shipping line till delivery at destination port shall be to the Seller's account.</u> •
7	Force Majeure
	<p>Notwithstanding anything contained in the contract, neither the Seller nor the Purchaser shall be held responsible for total or partial non-execution of any of the contractual obligations, should the obligation become unreasonably onerous or impossible due to occurrence of a 'Force Majeure' which directly affects the obligations to be performed by the Purchaser or the Seller; Such events include war, military operations of any nature, blockages, revolutions, insurrections, riots, civil commotions, insurgency, sabotage, acts of public enemy, fires, explosion, epidemics, quarantine restrictions, floods, earthquake, or acts of God, restrictions by Govt. authorities; over which the Seller or the Purchaser has no control.</p> <p>The party claiming to be affected by force majeure shall notify the other party in writing without delay, within two weeks on the intervention and on the cessation of such circumstance. Extension of time sought by the Seller along with supporting evidence and so granted by the Purchaser for the supply/ work affected, if any, shall not be construed as waiver in respect of remaining deliveries. Rescheduling of deliveries on account of force majeure conditions, if so agreed by the Purchaser, will not entail the Seller to claim any increase in the price on whatsoever account.</p>

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	Notwithstanding above provisions, Purchaser shall reserve the right to cancel the order/ Contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements. If deemed necessary, Purchaser may takeover partly processed material at a mutually agreed price.
8	LD / Penalty for delayed performance.
A	<p>I. Subject to force majeure conditions, LD shall be 0.5% of the total order value per week of delay or part thereof, subject a maximum of 10% of the total order value.</p> <p>II. In case of staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week or part thereof subject to a maximum of 10% of the undelivered portion .</p> <p>III. However in case of Capital Machine / BOP where staggered deliveries may be applicable, the LD cap will be levied on total order value inclusive of E&C charges. (15%)</p> <p>IV. Wherever Erection & Commissioning (E& C) is called for, the vendor is provided a stipulated period from date of site readiness. LD shall be applicable for any delay beyond the stipulated period mentioned in the PO.</p> <p>V. In case of any amendment / revision, the LD shall be linked to the amended / revised PO value.</p> <p>VI. Any loading on LD clause shall be to the extent to which it is not agreed to by the bidder (at offered value)</p> <p>For the sake of clarity – Total order value means purchase order value (exclusive of taxes), Undelivered portion means , the delayed portion for the given lot.</p> <p>In case a supply is rejected and the same is replaced at a later date, the date of replacement of accepted supply shall be reckoned for calculation of LD</p>
B	In case the contractually agreed delivery date falls on a holiday in BHEL Jhansi, the next working day shall be taken as contractual delivery date for compliance and applicability of LD / penalty.
C	<p>In case of Ex works Delivery terms for Indigenous supplies, the date LR shall be reckoned for LD deduction.</p> <p>In case of FOR Delivery terms, the date of entry in BHEL Jhansi (CISF date) shall be reckoned for LD deduction.</p> <p>In case of FCA Delivery terms / Ex Works Delivery terms of Foreign supplies , the date Invoice / Packing List / Test Certificate, whichever date is later, shall be reckoned for LD deduction.</p> <p>In case of FOB / CIF / CFR / CIP Delivery terms, the date of Bill of Lading , shall be reckoned for LD deduction.</p>
	Risk Purchase.
C	<p>If the material is not supplied within the agreed delivery period, BHEL reserves the right to cancel the order and purchase the material(of the undelivered portion) from alternate source(s) at the Risk and Cost of the Seller. In such an event, it shall be obligatory on the part of seller to make good any loss suffered by the purchaser. In such cases, BHEL shall withhold bills, bank guarantees, etc of the Supplier, which are pending either at BHEL, Jhansi or any other Unit of BHEL . Wherever Risk purchase is invoked attracting action as per guidelines of the Company, action shall be initiated to suspend business dealings with the Supplier. To know the implications of suspension, the bidder may see the “ Guidelines for suspension of business dealings with Suppliers / Contractors” which is uploaded on BHEL website http://www.bhel.com/vender registration/vender.php</p>
9	Indian Agents and Agency commission
A	BHEL prefers to deal directly with Foreign vendor, wherever required, for procurement of Goods. However if the Foreign Principal desires to avail services of an Indian Agent, then the Principal should ensure compliance to “regulatory guidelines” which will require submission of an agency agreement. The agency agreement should specify the precise relationship between the foreign OEM / foreign Principal and their Indian Agent. Any payment which the Indian agent receives in India or abroad from the OEM, whether as commission or as a general retainer fee, should be brought on record in the agency agreement.
B	The CIF price quoted will be deemed to be inclusive of Indian Agency commission. Agency commission as disclosed by the bidder in his quoted CIF price will be paid in Indian Rupees on receipt & acceptance of Materials or it's installation at destination, as the case may be. The lower of the TT selling rate prevailing on the date of (a_ technical bid opening, or (b) price bid opening, or (c) date of invoice, shall be considered for computation of Agency commission.
C	Be it a case of a Foreign / Indigenous Principal or OEM, in a tender either the Indian Agent on behalf of Principal / OEM or the Principal / OEM itself can bid, but both cannot bid simultaneously for same item / product in the same Tender. In case both submit a bid in the tender, then the bid of OEM only shall be opened

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D	Be it a case of a Foreign / Indigenous Principal or OEM, If an agent submits Bid on behalf of the Principal / OEM, the same agent shall not submit bid on behalf of another Principal / OEM in the Tender, for the same Item / Product.		
10	Documentation:		
A	Indigenous Purchase		
	Immediately on despatch of Goods, the following documents shall be necessarily sent by the Seller to the respective address(es) mentioned below		
(a).	<table border="1" style="width: 100%;"> <tr> <td style="width: 40%;"> Addressed to: Addl General Manager (Stores) Main Store Building BHEL Jhansi PIN-284120 Telephone . 0510-2412230 </td><td> Documents to be sent: (i) GST compliance Invoice – Duplicate for Transporter (ii) Challan/Despatch Advice note / Packing List etc. + 1 Photo copy (iii) Test Certificate, Guarantee / Warrantee Certificate (iv) LR/RR Duplicate for Transporter copy (v) O&M Manuals, wherever applicable </td></tr> </table>	Addressed to: Addl General Manager (Stores) Main Store Building BHEL Jhansi PIN-284120 Telephone . 0510-2412230	Documents to be sent: (i) GST compliance Invoice – Duplicate for Transporter (ii) Challan/Despatch Advice note / Packing List etc. + 1 Photo copy (iii) Test Certificate, Guarantee / Warrantee Certificate (iv) LR/RR Duplicate for Transporter copy (v) O&M Manuals, wherever applicable
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	In case any other documents are required, the distribution of such documents will be specified in the Purchase order.		
	Further, if specified in the Purchase order, all the details and copies of documents have to be uploaded by Supplier on BHEL portal before despatch of Goods		
B	Foreign Purchase – Imports		
	<p>Seller shall send 1 set of following documents, in English, within 7 days of BL date by courier to the Purchaser</p> <ol style="list-style-type: none"> Original Clean on board Bill of lading. One set of Commercial Invoice, Packing list indicating container-wise Gross weight, net weight, CBM (cubic metre) volume, No. of packages with Dimensions of each package. Original certificate of Country of Origin issued by Chamber of Commerce One set of Original test certificates and O&M manual where called for. Fumigation certificate wherever cargo is packed in wooden packing or packing of Plant origin material is used. <p>In case the Seller decides to negotiate all 3 originals of BL through negotiating Bank, non-negotiable documents (NND) consisting of copy of BL / HAWB & all originals at sl.no. 10-B2 to B5 will be couriered to Purchaser. Soft Copy of documents at sl. 10-B1 to B5 will also be sent by e-mail to the Purchaser at the e-mail address given in the PO. Other documents, as required, will be separately indicated in the Purchase Order. Additional expenditure, if any, incurred by the Purchaser by way of detention / demurrage, resulting out of delay attributable to the Seller in providing negotiable documents, will be recovered from the Seller.</p>		
C	In case of incomplete documentation, the communication shall be provided to supplier. The delays in submission of documentation by the supplier shall be reckoned while releasing payments to the Supplier		
11	Pricing Terms		
	Prices once quoted shall remain firm within the validity or any extension thereof for placement of order, till complete execution of the order, without any escalation/increase for any reason, whatsoever, unless specifically provided for in the Enquiry & PO. In case of foreign vendors, the quoted price shall be taken as inclusive of Third Party Inspection and testing charges as called for in the NIT.		

12	Price Validity :
	<p>Unless stated otherwise in the enquiry, offer shall be valid for a period of 120 days from the date of Techno- commercial (Part-I) bid opening date.</p> <p>The prices quoted for spare parts of the main equipment shall be kept valid for a period of 180 days from the date of placement of PO for the main equipment.</p>
13	Taxes & Duties - Indigenous Purchase
A	<p>The Taxes and duties as applicable shall be payable extra which may include GST against Gate pass- The Seller shall clearly indicate extent of taxes as applicable in his techno commercial bid. In the event of vendor failing to furnish valid GST invoices with appropriate HSN Code , amount corresponding to GST will be disallowed by BHEL while making payments.</p> <p>Bidders to ensure applicability of IGST / CGST/SGST based on the Inter / Intrastate movement of goods.</p> <p>GST Registration Number (GSTIN) should be clearly mentioned on the vendor's quotation.</p> <p>Please quote our IGST registration number 09AAACB4146P2ZC in all invoices raised for supply of goods and services under GST regime and also ensure filing of timely return and payment of tax and compliance of other applicable provisions on supplier under GST regime.</p> <p>In the event of any disallowance of input credit or applicability of interest or any other financial liability arises on BHEL-Jhansi due to any default of supplier under GST such implication shall be to supplier's account.</p> <p>GST shall be levied on LD and the relevant tax invoice shall be provided to vendors for availing credit.</p> <p>In case of directly despatchable items to Customer's Site, Supplier to bill to BHEL Jhansi at its GST Account number 09AAACB4146P2ZC and ship to the respective Customer</p> <p>Since, input credit of GST will be available to BHEL-Jhansi only after correct filing of return and payment of applicable GST by supplier, reimbursement of GST shall be made by BHEL-Jhansi on matching of vendor inputs at GST portal and after ensuring availability of input credit to BHEL-Jhansi. Payment of tax shall be done only after availing matching ITC, in all cases where bills are submitted directly to BHEL-Jhansi or through bank or under LC or through any other mode.</p> <p>Other statutory declaration forms are also to be submitted in time, as mentioned in the relevant Laws. BHEL reserves the right to withhold the payment due to the vendor equivalent to BHEL's tax and related liability thereon.</p> <p>In case of any changes in statutory laws w.r.t. taxes and duties, the same shall be applicable at the given point of time.</p>
B	<i>Wherever GST is not applicable, the tax and duty structure , as applicable, is to be complied by the seller.</i>
14	Taxes & Duties - Foreign Purchase – Imports
A	The offered prices shall be inclusive of all the Taxes and duties as applicable in the country of bidder / country of dispatch for the quoted FCA / CFR/CIF price.
15	Payment Terms-
A	<p>Indigenous: 100 % payment within 90 days (45 days for MSE / NSIC registered suppliers as per relevant act in force) from the date of receipt of material and submission of clear and admissible bill, subject to acceptance of material at BHEL , on direct presentation of the documents..</p> <p>Payments to vendors who are seeking benefits under MSME act shall not be entertained if the Udhog Aadhar Memorandum (UAM) submitted by them is not valid on the date of Purchase Order and date of supply (SRV Date of BHEL) . It is hence in the interest of the vendor that they validate the status of UAM regularly with BHEL.</p> <p>In case of despatch of material to site directly, site certification for receipt of materials is required unless otherwise provided for in the PO. Any deviation from the above payment terms, if accepted (by BHEL), shall be loaded @ SBI base rate(as on date of Part I bid opening) + 6%, for the purpose of bid evaluation.</p>

	<p>All documents as called for in the PO have to be submitted by the Supplier at the time of receipt of material and this should include the Invoice of the Supplier - Original copy of the Buyer and Duplicate for Transporter. On receipt of Invoice, the same shall be acknowledged by BHEL. Any clarifications on the bill submitted by the supplier shall be sought generally within 30 days (15 days for MSE / NSIC registered suppliers as per relevant act in force) of receipt of bill at BHEL. While it would be in the interest of the Supplier to provide the reply immediately to the clarifications sought , the Supplier is to respond at least within 7 days from the date of clarifications sought by BHEL. Wherever clarifications are sought by BHEL, the date of receipt of clarifications from the supplier shall be considered as date of submission of clear and admissible bill.</p>						
B	<p>Foreign: 100% against irrevocable, unconfirmed LC, payable within 120 days of the bill of lading (BL) date. In case BHEL considers any deviation in payment terms i.e. early payment based on vendor's request, then bids shall be evaluated with loading of State bank of India Base rate (as on date of Part I bid opening) plus 6%, for the credit period short of 120 days. The LC shall be established 2 month prior to shipment date, valid for period of 120 days, unless agreed otherwise.</p> <p>Payment terms of CAD payable on 120th day of BL / HAWB date shall be preferred.</p>						
C	<p>While there could be exceptional situations wherein the payment may be delayed beyond the stipulated time mentioned above, it is clarified that BHEL shall not pay any interest on such delays</p>						
D	<p>In case of any disagreement between BHEL and the Supplier on any part of the bill, such part shall be severed from the rest and payment against agreed and admissible part shall be processed as per laid down procedure, while the disputed part shall be dealt as per contract provisions viz. conciliation, dispute resolution, arbitration, etc</p>						
16	<p>Inspection of Goods</p>						
A	<p>The Seller shall give adequate notice, of 1 week or as mutually agreed period, in writing to the Purchaser about the date and place at which the goods will be ready for inspection/ testing, as provided for in the contract.</p>						
B	<p>Purchaser or his authorized representative shall be entitled to carry out inspection of material and workmanship at Seller's premises or at his sub-contractor's premises at all reasonable times during execution of contract; Such inspection, examination and testing, if made, shall not absolve the Seller from his obligations under the contract.</p>						
C	<p>All costs related to inspections and re-inspections shall be borne by the Seller. In case of foreign vendors, the cost of third party inspection, where called for, shall be deemed to be included in the quoted price. Seller shall be responsible to provide assistance such as labour, materials, electricity, fuels, stores, apparatus, instruments at his cost, as may be required and as may be reasonably demanded to carry out such tests effectively.</p>						
D	<p><u>Undertaking to be provided by Suppliers before despatch</u> : The suppliers , before despatching the jobs, shall provide an undertaking on their letterhead, that the jobs have been made as per BHEL Specification / Drawings, that the test results meet the specified parameters of the drawing / specification, that the supplies have been inspected as per Quality Plan (if called for in the Purchase Order), that on receipt of supplies at BHEL, Jhansi; BHEL reserves the right to reject any supplies which are non compliant, that in case the material is accepted with deviationst wherever rectifications / rework is observed, that the Supplier shall be given seven days notice to attend to the work and if the Supplier does not attend the rectifications in the said period, BHEL shall reserve the right for suitable deductions.</p> <p>Despatch clearance shall be given when the Supplier provides the above undertaking (as per Annexure I) to BHEL</p>						
E	<p><u>Uploading despatch information on BHEL SIP</u></p> <p>The supplier has to upload despatch information details by logging in at 'Supplier Information Portal' of BHEL Jhansi website using their User name (Vendor Code) and Password. Subsequently, the supplier has to click at the link'Update Consignment details' provided therein.Submitting 'Despatch Intimation' is mandatory. All supplies arriving (reaching BHEL Jhansi) will be allowed inside CISF Material gate of BHEL Jhansi only if the supplier has submitted online Despatch Intimation.</p> <p>The following documents are necessary before entry of material at our Material Gate:</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 5%;">1</td><td>GST Invoice OR Delivery Challan (as per rule 55) OR Bill of entry for imports OR Excise Duty Invoice for Petroleum supplies</td></tr> <tr> <td>2</td><td>Lorry Receipt (LR) OR Railway Receipt (RR) OR Door Delivery (Courier Docket..).</td></tr> <tr> <td>3</td><td>'Despatch Intimation' (Printout required).</td></tr> </table>	1	GST Invoice OR Delivery Challan (as per rule 55) OR Bill of entry for imports OR Excise Duty Invoice for Petroleum supplies	2	Lorry Receipt (LR) OR Railway Receipt (RR) OR Door Delivery (Courier Docket..).	3	'Despatch Intimation' (Printout required).
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The following documents are additionally required for **SRV clearance** if they are called for in the Purchase Order (PO):

4	Complete Test certificates/Inspection reports
5	Guarantee certificates
6	Any other document as called for

Following may be required for **SRV preparation** depending on the nature of material being supplied:

7	Packing lists, wherever applicable.
8	Weighment slip.

A cost of one percent of the transaction value (not more than Rs 5000 per transaction but not less than Rs 500 per transaction) shall be deducted from supplier bills in case supplier has failed to upload the despatch information on Supplier Information Portal

E Material despatched one month prior to the date of despatch shall not be permitted inside BHEL, unless there are instructions otherwise from BHEL. In all such cases, material will be allowed inside only if approved by Head MM

Material despatched 10 weeks after date of despatch shall not be permitted inside BHEL, unless there are instructions otherwise from BHEL. In all such cases, material will be allowed inside only if approved by Head MM

17 Warranty , Corresponding Repairs / Replacement of Goods, and Deductions

Goods shall comply with the specifications for material, workmanship and performance.

The warranty shall be for a period of 24 months from the date of receipt at BHEL, Jhansi

However, **wherever erection & commissioning also is in the scope of the bidder**, the warranty shall be for a period of 24 months from the date of supply or 18 months from the date of commissioning, whichever is later.

In case any other terms are to be specified for warranty, the same shall be specified in the specific enquiry

A Normally deviation shall not be accepted for the criteria of warranty period. The offers of bidders, who offer deviation to the warranty terms mentioned in the NIT, are liable to be rejected.

If the item supplied is found non-compliant during the warranty period, leading to rejection, the Seller shall arrange free replacement / repair of goods, within one month from the date of intimation or any mutually agreed period. The rejected goods shall be taken away by the Seller at his cost and replaced on Delivered Duty Paid (DDP) (FOR - BHEL Stores/ designated destination basis) within such period. In the event of the Seller's failure to comply, Purchaser may take action as appropriate, including Repair / Replenish rejected goods & disposal of rejections, at the risk & cost of the Seller.

In case the defects attributable to Seller are detected during processing of the goods at purchaser's/ his subcontractor's works, the Seller shall be responsible for free replacement/ repair of the goods as required by the purchaser.

18 Evaluation and Loading Criteria:

Evaluation of the tender shall be on the basis of delivered cost, i.e. 'total cost to BHEL' w.r.t the finalized technical scope and commercial conditions (after considering, inter alia, Customs Duty and CENVAT/ VAT/ CST/Service Tax/Entry Tax or any other tax as applicable). Exchange rate (TT selling rate of State Bank of India) applicable on the date of Part-I bid opening shall be considered for evaluation of foreign bids. If the relevant day happens to be a bank holiday in India, then the FOREX rate as on the previous bank working day shall be taken for evaluation.

Foreign suppliers shall ensure that the benefits as applicable under Free Trade Agreement (FTA) with Government of India are disclosed in the bid & relevant documents such as Certificate of Country of Origin, issued by the appropriate authority in the country of Export, is provided by the vendor along with dispatch documents. Bids shall be evaluated with such applicable benefits. In the event of Seller failing to provide appropriate documents for Purchaser to avail disclosed

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	<p>concessional duty benefits in India, the cost incurred owing to consequent delays, detention and demurrage thereof, will be to the Seller's account.</p> <p>To arrive at the Delivered Cost, the quoted price shall be suitably loaded, the details of which are mentioned in this annexure / special remarks of the enquiry. In case of any additional techno commercial deviations, for which the loading criterion is required to be framed after opening of techno commercial bid, such criteria shall be communicated to all qualified bidders before price bid opening.</p>
19	Non-Disclosure Agreement
	<p>All Drawing and technical documents relating to the product or its manufacture submitted by one party to the other, prior or subsequent to the formation of contract, shall remain property of the submitting party. Drawing, technical documents or other technical information received by one party, shall not without the consent of the other party, be used for any other purpose than that, for which they were provided. Such technical information shall not without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to a third party. Patterns supplied by BHEL will remain BHEL's property which shall be returned by the bidder on demand to BHEL. Bidder shall in no way share or use such intellectual property of BHEL to promote his own business with others. <u><i>BHEL reserves the right to claim damages from the bidder, or take appropriate penal action as deemed fit against the bidder, for any infringement of the provisions contained herein.</i></u></p>
20	RIGHT OF REJECTION /NON- PLACEMENT OF PO/ SHORTCLOSURE OF PO: BHEL reserves the right to accept the offers in part or in full, or cancel the Tender enquiry without assigning any reason whatsoever / non placement of PO or contract / short closure of PO or contract.
21	Performance Bank Guarantee (PBG)/ Security Deposit (SD):
A	Bank Guarantee wherever called for, shall be in the BHEL prescribed format. In case the order is to be placed in foreign currency, the BG must normally be in Indian Currency from the Consortium Banks of BHEL / as specified in the specific Enquiry
B	Wherever the contract is for supply of Goods processed on labour basis from BHEL supplied materials, the materials shall be issued against a suitable security, preferably Bank guarantee.
22	Benefits earmarked for Purchase from Micro & Small Enterprises (MSEs) – Indigenous Purchase
A	MSE suppliers who are registered by bodies like MSMED, NSIC & DIC specified by Ministry of Micro, Small and Medium Enterprises (MoMSME) can avail the intended benefits only if they submit along with the offer, relevant documents including valid certificate as mentioned in " Format for Supplier MSME Status' on Supplier Information Portal of BHEL, Jhansi. In case the valid MSE registration of the bidder is already updated in SDC records of BHEL, Jhansi, it may not submit the details again. It is hence in the interest of the supplier that they validate the status of UAM regularly with BHEL, if they would like to avail intended benefits under MSME Act.
B	Tenders to MSE suppliers shall be issued free of cost & no EMD wherever called for will be insisted upon. Such MSE bidders shall submit along with bid, relevant documents including valid certificate. Date to be reckoned for determining the deemed validity will be the date of bid opening (Part I in case of two part bid). Non- submission of such document will lead to consideration of their bid, at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted Officer.
C	In tender, participating MSEs quoting price within price band of L1 (on total cost to BHEL) +15% shall also be allowed to supply a portion of requirement by bringing down their price to L1 price in a situation where L1 price is from someone other than a MSE and such MSE shall be allowed to supply up to 20% of total tendered quantity. In case of more than one such MSE within price band of L1 (on total cost to BHEL) +15%, the supply shall be shared proportionately (to tendered quantity, as per their tender ranking of the bidders and also their SC/ST status). However if there are more than one MSE vendor at the same price level, then the quantity shall be distributed equally. A quantum of 4% out of 20% quantity, so earmarked, will be reserved for MSE's owned by SC / ST entrepreneurs who submit their bid with relevant documents. However, such distribution shall be subject to the tender requirement in terms of Customer approval of vendors, divisibility of quantity, etc. While all efforts shall be made to ensure compliance to the stated distribution, the decision of BHEL in distribution stated in this clause shall be binding on all bidders.

	The above distribution is not applicable (a) where L1 vendor is MSE vendor and minimum 20% share is assured to the L1 bidder in the tender, or (b) where the MSE bidders qualified for distribution as per 'manner of splitting' clause in NIT already cater to 20% share in the tendered load.
D	In case it comes to notice that the bidder is found responsible for misconducts like, having submitted fake/false/forged documents/ certificates, has misrepresented the facts, has wilfully suppressed the facts, has resorted to unethical/ illegal means, etc., action shall be initiated against such bidders as per the extant guidelines of the Company for suspension of business dealings.
23	Benefits earmarked to suppliers for Purchase under 'MAKE IN INDIA'
	As part of minimizing import content, Government of India, vide order no P-45021/2/2017-B.E.-II dated 15.06.2017, under the subject – Public Procurement (Preference to Make in India) -- has set the initiatives to encourage and promote indigenously manufactured goods within India and services provided by sources within India. . In line with this, bidders who manufacture the goods and provide services within India (otherwise referred as local suppliers) are given purchase preference and are entitled to benefits in the tender
A	Definitions
(i)	Local content means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent. Presently, the minimum local content required is 50%. The nodal ministry may prescribe a higher or lower percentage in respect of any particular item and may also prescribe the manner of calculation of local content.
(ii)	Local supplier means a supplier or service provider whose product or service offered for procurement meets the minimum local content as prescribed
(iii)	Margin of Purchase Preference means the maximum extent to which the price quoted by a local supplier may be above the L1 for the purpose of purchase preference. Presently the margin of Purchase preference is 20%.
B	Conditions under which preference is given
(i)	In procurement of goods in respect of which the Nodal ministry has communicated that there is sufficient local capacity and local competition, and where the estimated value of procurement is Rs 50 lakhs or less, only local suppliers shall be eligible. If the estimated value of procurement of such goods is more than Rs 50 lakhs, provisions of 23(B) (ii) and 23(B)(iii) shall apply.
(ii)	If the procurement of goods are not covered by 23(B)(i) and are divisible in nature, the following procedure shall be followed :
a	If L1 is a local supplier, the order for full quantity shall be awarded to local supplier
b	If L1 bid is not from a local supplier, 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the local suppliers, shall be invited to match the L1 price for the remaining 50% quantity, subject to the local supplier's quoted price falling within the margin of purchase preference, and the order for that quantity shall be awarded to such local supplier subject to matching the L1 price. In case such lowest eligible local supplier fails to match the L1 price or accepts less than offered quantity, the next higher local supplier within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and the order shall be awarded accordingly. In case some quantity is still left uncovered on local suppliers, then such balance quantity may also be ordered on the L1 bidder.
iii	If the procurement of goods are not covered by 23(B)(ii) and are not divisible in nature, and in procurement of services where the bid is evaluated on the price alone, the following procedure shall be followed :
a	If L1 is a local supplier, the order shall be awarded to local supplier
b	If L1 bid is not from a local supplier, then the lowest bidder among the local suppliers, will be invited to match the L1 price, subject to the local supplier's quoted price falling within the margin of purchase preference, and the order shall be awarded to such local supplier subject to matching the L1 price. In case such lowest eligible local supplier fails to match the L1 price, the local supplier with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on, and the order shall be awarded accordingly. In case none of the local suppliers within the margin of preference match the L1 price, then the order may be awarded to the L1 bidder.
C	Exemption of small purchases
	Notwithstanding anything contained at clause 23B above, procurements where the estimated value of procurement is less than Rs 5 lakhs are exempt and purchase preference shall not be accorded in such cases.

D	Verification of local content
(i)	The local supplier, at the time of tender, bidding or solicitation, shall be required to provide self certification that the item offered meets the minimum local content and shall give details of the location(s) at which the local value addition is made.
(ii)	In cases of procurement for a value in excess of Rs 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
(iii)	False declarations shall be in breach of code of integrity and shall invite action as per guidelines for Suspension of Business dealings with Suppliers
E	In case of any disputes / clarifications, the extant guidelines of Government of India shall prevail.
24	Fraud Prevention
	The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice
25	Settlement of Disputes & Arbitration
A	All questions/interpretations regarding subject matter of the Contract shall be decided by the Purchaser on the request of the Seller and the decision of the Purchaser shall be final.
B	In case of dispute, steps shall be taken by the parties to the contract to settle the same through negotiations.
C	In case, dispute is not settled in negotiations, it shall be referred to Conciliator appointed by the competent authority of the Purchaser.
D	In case dispute is not settled in conciliation proceedings, the same shall be referred to Arbitration as per Corporate Guidelines of the Purchaser and the arbitration proceeding shall be conducted as per provisions of the Arbitration and Conciliation Act, 1996 read with Corporate guideline as amended from time to time.
E	The Seller shall continue to perform the contract, pending settlement of dispute(s).
26	Applicable Laws and Jurisdiction of Courts
	Indian laws both substantive and procedural, for the time being in force, including modifications thereto, shall govern the Contract including Arbitration proceedings. The competent Courts at Jhansi in the State of Uttar Pradesh, India shall have sole jurisdiction.
27	Conciliation
	<p>BHEL and bidder agree that if at any time (whether before, during or after the arbitral or judicial proceedings), any Disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the terms and conditions of order, which the Parties are unable to settle mutually), arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators.</p> <p>Notes:</p> <p>1. No serving or a retired employee of BHEL/Administrative Ministry of BHEL shall be included in the BHEL Panel of Conciliators.</p> <p>2. Any other person(s) can be appointed as Conciliator(s) who is/are mutually agreeable to both the parties from outside the BHEL Panel of Conciliators.</p> <p>The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof. The details of Conciliations shall be governed by the BHEL Conciliation scheme 2018.</p>
28	General
	The Bidder shall keep a track of any changes by visiting the Supplier Information Portal of BHEL, Jhansi at https://www.bheljhs.co.in/apps/sip/index.php